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CONTENTS

FRONT COVER ILLUSTRATION

Removing a 95 Ton Bucyrus Steam Shovel, Wrecked by Rock Slide in Culebra Cut, Panama Canal. Two 100 Ton Bucyrus Wrecking Cranes Are Shown at Work.

Leading Articles

American Road Builders' Association Convention 89
American Road Congress, Atlantic City 96
Largest Rock Crushing Plant in the World 83
Steam Shovels Make New Record in Lake Superior Ore Shipments 96
Unusual Stripping Operations at Utah Copper Company's Mines 91

Editorial

Business Forecast 98
Future of Electricity in Excavating Operations 97
National One Cent Letter Postage 97
Our New Year's Post Card 97
Presidential Election 97
Review of Books and Catalogues 100
What They Think of The Excavating Engineer 101

Field Notes

Device for Bending Pipe 105
Pointers for Engineers and Firemen 105

Devices You Ought to Know About

Bucyrus Long Boom Revolving Shovels 103
Continental Dump Cars 104
Tiger Steel Bunk 103

Shots From the Firing Line

Brief Notes From Men in the Field 106

Index to Advertisers, Page 114.

ADDRESS ALL COMMUNICATIONS TO

THE EXCAVATING ENGINEER PUBLISHING COMPANY

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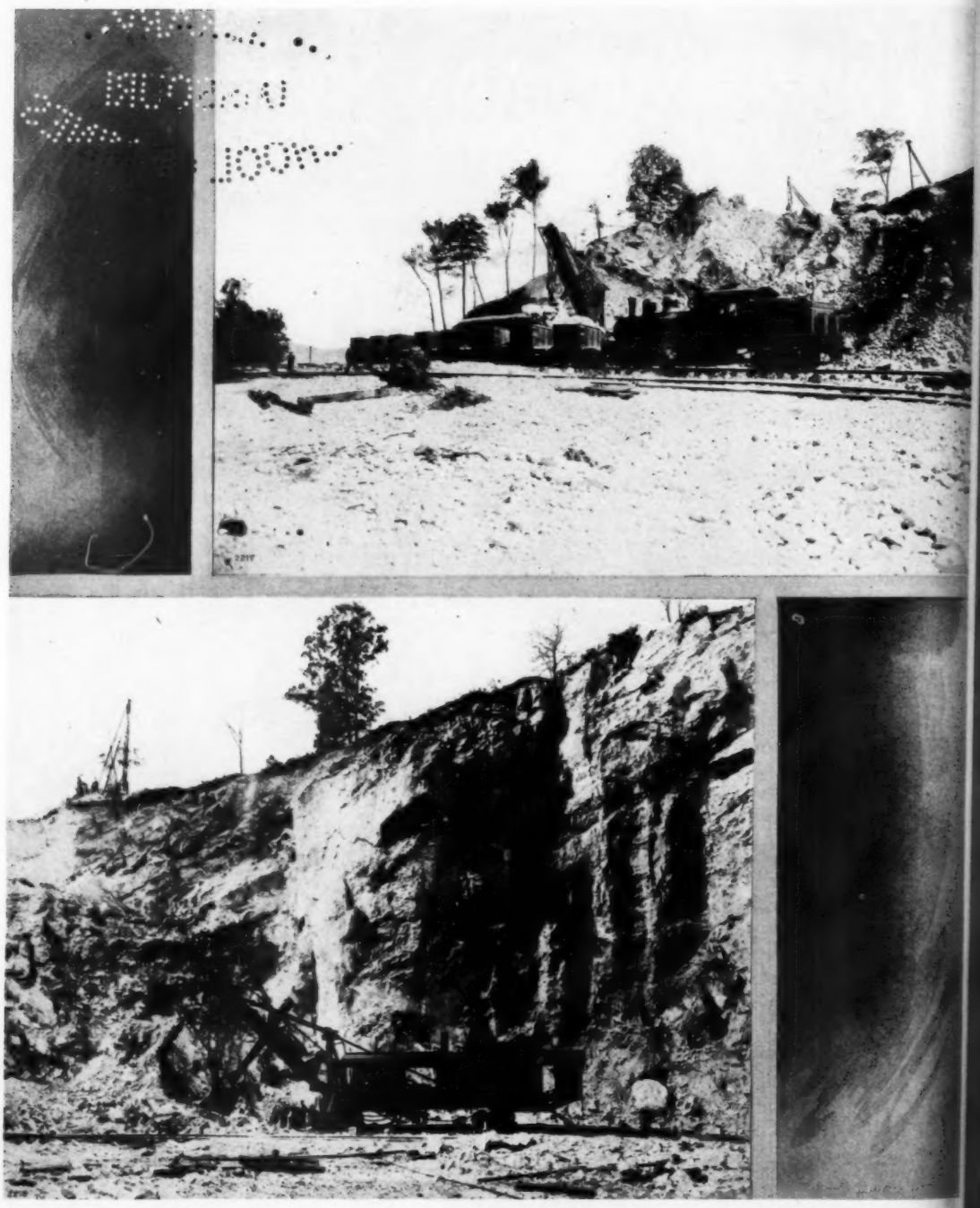


The Upper View Shows a Train of Special Dump Cars Being Loaded and the Lower Picture One of Three 95-C Bucyrus Steam Shovels in the Tomkins Cove Stone Company's Quarry.

The Largest Rock Crushing Plant in the World

AN entirely new rock crushing and storage plant with a crushing and screening capacity of 1000 yd. per hour of commercial sizes of product has been installed by the Tomkins Cove Stone Company, at Tomkins Cove, on the west side of the Hudson River, about 40 miles from New York. It is located alongside the main tracks of the West Shore Railroad, on the river bank adjacent to the company's quarry, which includes over 200 acres of exceptionally hard solid limestone rising to a height of 200 ft. above the river, all of which is available for advantageous quarrying and producing excellent stone with little or no waste labor or material.

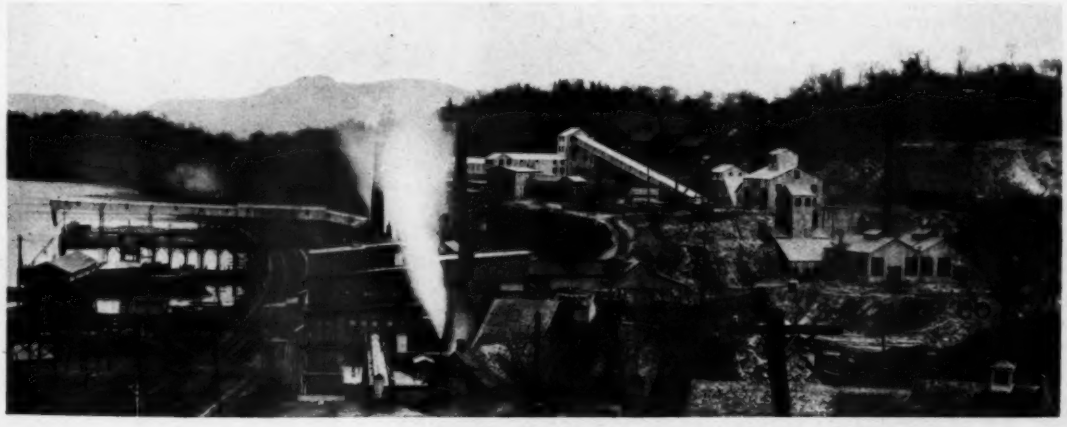
The quarry has been operated for about 70 years and millions of yards of stone have been taken from it, in three benches having a combined height of 200 ft.

Among the notable features of the plant are its capacity, 8000 cu. yds. in ten hours, is believed to be larger than that of any similar plant; quantity, quality and location of the rock supply; favorable topographical conditions and facilities for shipment by rail or water; construction, which is fireproof throughout, equipment, which is of the latest improved type, in many cases of special design; automatic operation and elimination of a large proportion of labor; electrical distribution of power; capacity of the crushing rolls, sufficient to receive the largest stone quarried there; automatic separation of the product into different commercial sizes; provision for manufacturing, storing and delivering different commercial sizes in different quantities; balanced proportions of the different elements of the installation; rapidity of handling and economy of production.

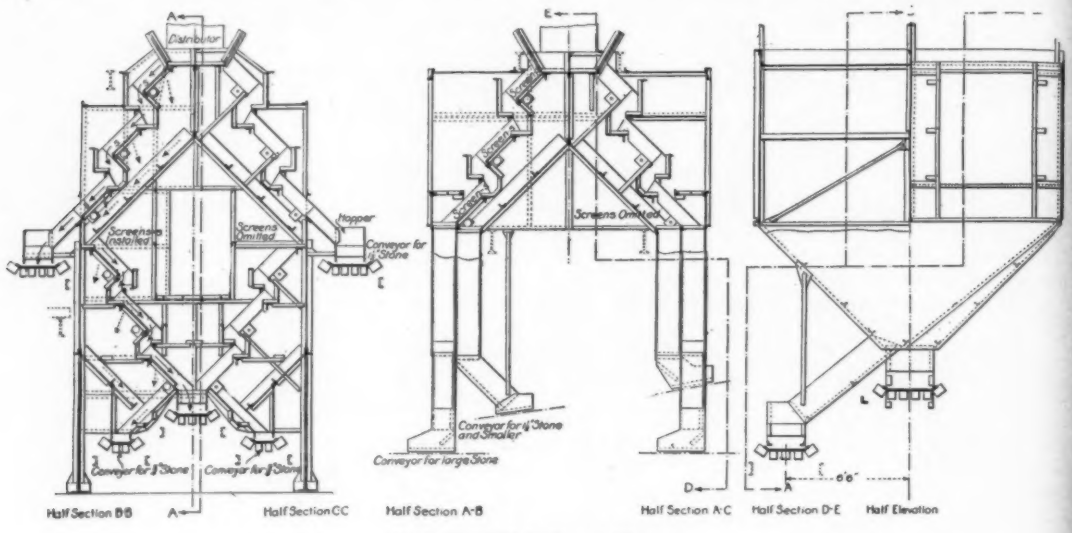
The rock is blasted from a high vertical quarry face, loaded by Bucyrus steam shovels to cars on a high level track, and drawn an average distance of about 800 ft. to the top of the crusher house. It is dumped directly into the crusher hopper and passes vertically downward through three successive sets of horizontal crusher rolls, which reduces it to a maximum size of about 2 in. From the lower rolls it is raised about 90 ft. by a steeply inclined steel pan elevator which discharges into a hopper in the top of the preliminary screen house. This hopper discharges into a distributor that spreads the broken rock evenly over a gravity screen that removes all stone larger than 1½ in. and delivers it to a belt conveyor by which it is returned to the last pair of rolls.

About 90 per cent of the product which passes through the preliminary screen is delivered by a belt conveyor 362 ft. long, inclined about 10 deg., to the top of the main screen house where it passes by gravity vertically through a stationary distributing and screening apparatus which separates it into 1½-in., ¾-in. and ⅜-in. sizes, each of which is discharged on a separate horizontal belt conveyor and dumped into one of the five storage bins with a combined capacity of 20,000 cu. yd.

The loading capacity is at present about 600 yd. per hour. Both loading and shipping capacities



A General View of the Tomkins Cove Stone Company's Plant, at Tomkins Cove, N. Y.



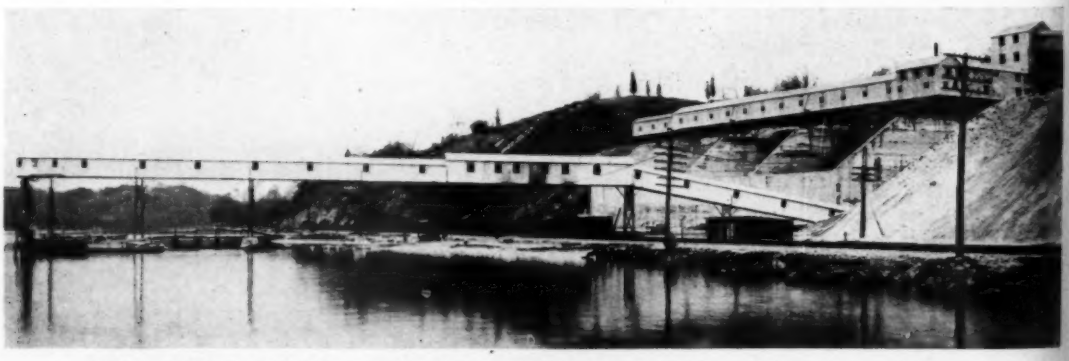
Sections of Main Screen House

can easily be largely increased at any time by the installation of wider belts in the present conveyors.

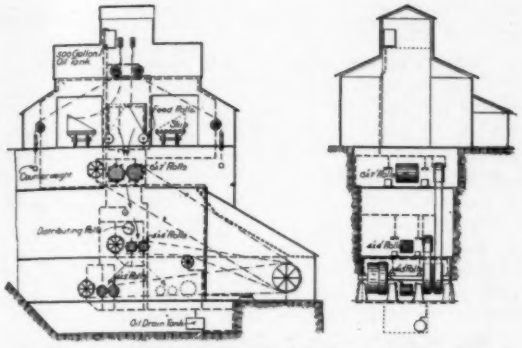
The conveyor galleries, supporting trestles and towers, and the roofs, beams, girders, and columns of the crusher and screen houses and power house are of structural steel, sheathed with corrugated iron and furnished and erected by the Snare & Triest Company. All floors are of concrete, all foundations on solid rock. Excepting the steam shovels, locomotives and the main jack shaft operating the crusher roll, all of the equipment is operated by separate electric motors of the Allis-Chalmers make, and all electric wires that otherwise would be dangerously exposed are run in pipe conduits.

At present the stone for the new plant is taken wholly from the upper bench of the quarry because its floor, at the same level as the receiving platform of the crusher house, enables an abundant quantity of stone to be easily delivered.

The face of the upper bench of the quarry is about 140 ft. high and 700 ft. long and is worked by full depth holes of a uniform diameter of 6 in., drilled by three Keystone well drills operated day and night by two men each. The holes, are about 8 ft. apart in rows 30 ft. back from the face of the quarry, are each charged with from 400 to 600 lbs. of 60 per cent dynamite, chiefly furnished by the Du Pont de Nemours Powder Company, and are fired in groups



Loading Bridge for Both Barges and Railroads With Crushing Plant, Screen House, Storage Bins and Distributing Gallery on the Right.



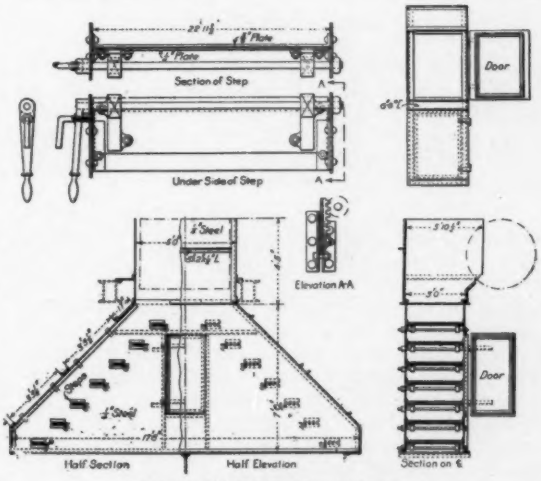
Arrangement of Crushing Rolls, Belt Drive and Oiling System.

of 5 to 6. The rock, which is not stratified, is shattered in irregular pieces, roughly cubical, nearly all of which are within the capacity of the three 95-C Bucyrus steam shovels, having 3½-yd. dippers.

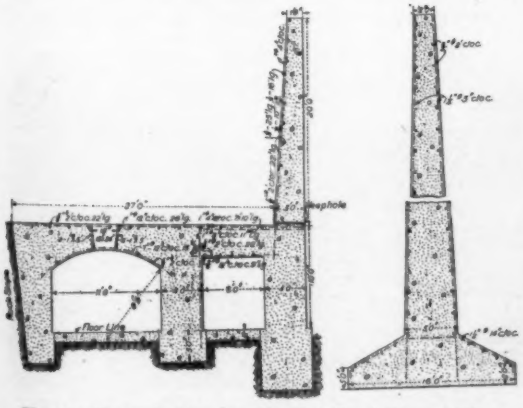
The shovels load the stone into 8-yd. 6½ x 9 ft. steel skips 4½ ft. deep, manufactured by John Turls Sons, Newburgh, N. Y. The skips are set on separate steel frame standard gauge cars manufactured by the Ramapo Iron Works, and are drawn by 40-ton American Locomotive Company's locomotives to the crusher house. There are in the quarry and around the plant about 3 miles of standard gauge track laid with 80-lb. rails.

The loaded skips are delivered at ground level in the upper story of the crusher house on both sides of the first rolls. They are unloaded from the cars by a counter-weighted whip line led over a sheave in the roof and thence to a Lidgerwood hoisting engine. The skip is dragged to the receiving table where its forward lower edge engages a stop against which it is revolved upward to dump its contents into a vertical sided hopper made of heavy ribbed sectional cast-steel plates with a 7 x 9 ft. rectangular opening to the rolls.

Any stone which can be loaded in a skip or handled by a shovel is quickly crushed by the rolls, which reduce a 9 x 4½ x 4½ ft. hard stone to 6 or 8-in. pieces in 10 sec. Sometimes larger pieces are chained and loaded, and when by accident a piece is delivered which is too large to pass through the opening, or jammed diagonally, a short hole is quickly drilled in it by a pneumatic tool and a light charge of dynamite fired without removing it from the bin. This breaks it enough to enable it to drop into the rolls and it is immediately crushed without difficulty or injury to the machinery and with very little loss of time.



Details of Distributing Scheme.



Showing Concrete Construction Details of Storage Bins.

The 60 x 123-ft. power house on the second bench of the quarry, close to the vertical face of the rock, has a trussed roof about 20 ft. high in the clear and is divided by an interior row of columns in two parts with separate double pitched roofs and monitors. In the 43 x 60 ft. boiler room there are installed a battery of three 300 H. P. Heine boilers with room for one more, two 12 x 8¼ x 12 in. Davidson single-acting feed pumps, and a Cochrane water heater and purifier. Two boilers supply all the steam at present required, leaving the third always in reserve. A sidetrack from the boiler house to the main line of the West Shore Railroad and an elevated coal storage bin with automatic feed to the boilers has been provided.

In the 60 x 80-ft. engine room there is installed one heavy-duty cross-compound 18 x 36 x 36-in. condensing engine of the Reynolds type direct-connected to a 500 K. W. generator furnishing a 500 volt, 25-cycle, three-phase current for all electric light

Belt Conveying System.

and power throughout the plant. There is also installed a 1000 H. P. heavy-duty cross-compound 22 x 44 x 42-in. condensing engine of the Reynolds type, connected to a 15-in. jack shaft 36 ft. long with two double face pulleys 10 ft. in diameter belted to the Edison crusher rolls.

Condensation water is pumped from the river through a 10-in. spiral riveted pipe by a centrifugal pump driven by a 30 H. P. motor, and is returned to the river through a pipe of the same diameter. There is also in the engine room a large Ingersoll-Rand air compressor and the usual complement of oil separators, traps, filters and a gravity oiling system. The engines and generators were installed by the Allis-Chalmers Company, Milwaukee, who also furnished all of the 13 motors from 15 to 150 H. P., which are required in different parts of the plant for the separate and independent operation of all the principal items of the machinery.

In order to pass the stone by gravity through the sets of crusher rolls, the latter are arranged in a vertical line between the levels of the floors of the second and third benches of the quarry. The skip dumping machinery and the lubricating oil reservoir are located in the roof of the crusher house and the rolls are supported on very heavy steel girders.

The general arrangement is indicated in the isometric view of crusher house. The rolls are of the Edison type, designed by the Edison Crushing Roll Company. The first or upper pair of rolls, 6 ft. in diameter and 7 ft. long, are run at 180 R. P. M. and will crush the stone much faster than it can ordinarily be delivered. They are set about 6 ft. 6 in. apart on centers and have forged steel mandrels about 5 ft. in diameter to which are cap-bolted 16 half length segmental surface plates of chilled cast iron 6 in. thick with projections or spurs about 3 in. long. On one of the rolls, two diametrically opposite longitudinal rows of spurs are 6 in. long, and act as sledges to break the rock which is crushed between the other spurs.

Horizontal feed rolls 30 in. in diameter, and both operated by a 15 H. P. motor, are set, one on each side of the opening in the feed tube, and a pair of full length distributing rolls 30 in. in diameter are placed in the bottom of the receiving hopper to deliver its contents more uniformly to the second pair of rolls 13 ft. vertically below the first pair, which are 4 ft. long and 4 ft. in diameter and of similar construction to the first pair. They are arranged to deliver to either of two pairs of finishing rolls several feet below them, which are 4 ft. long and 3 ft. in diameter with corrugated surfaces instead of spurs. Only one pair of the corrugated rolls has been installed, but provision is made for the installation of a second pair if necessary, thus making the plant symmetrical and delivering broken stone on both sides of the center line to the pan conveyor.

The rolls are enclosed in riveted steel hoods hinged on their upper edges and lifted by tackles provided for the purpose. All of their bearings are flooded with oil in dust-proof iron boxes and the oil from a 500 gallon reservoir in the roof of the building is distributed through pipes and sight feeds to the bearings and collected from them in pipes which deliver to a 600-gal. drain tank in the basement. From this tank the oil is forced by a Davidson vertical triplex pump through a filter and back to the roof tank, thus providing for constant circulation and purification of the oil at a minimum loss.

The product of the rolls is elevated 83 ft. by a 45 deg. pan conveyor, said to be the largest yet constructed, with 116, 72 x 30 in. riveted steel triangular pans 2 ft. deep, with a capacity of about 1000 lb. each. This conveyor is operated by a 150 H. P. motor at a speed of 87 ft. per minute and carries 1000 yds. of broken rock per hour. All the other conveyors, which with this exception are of the belt type, manufactured by the Stephens-

Structural Frame of the Conveyor House over Storage Bins.

Adamson Manufacturing Company, Aurora, Ill., are operated by separate electric motors.

The pan conveyor discharges into the hopper of a fixed gravity screen which separates the broken stone into two sizes, one of which contains pieces above 1½ in. and the other contains everything below 1½ in. These screens are of the Edison patent and have a number of comparatively long and narrow inclined shelves over which the broken stone falls in a sort of cascade with its velocity checked at each step, so that all of the screens are efficient.

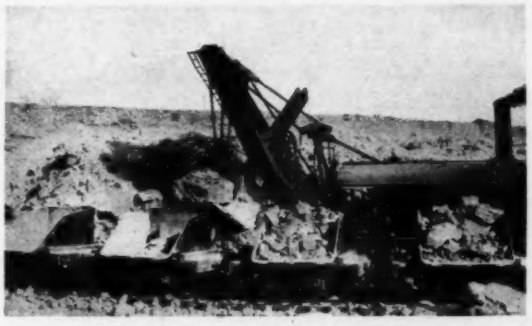
The screens are arranged symmetrically inside a steel plate shell, and the two sets, each with a total area of 96 sq. ft. are separated by a central vertical diaphragm enabling either or both sides to be used at will. The removable screen plates, 2 ft. wide, are made in sections 4 ft. long, of thin carbon steel plates punched with square holes and are set at an angle of about 40 deg. with the horizontal.

The efficiency of the screen is very sensitive to changes in the character of the material or in the amount of moisture which it contains and to the inclinations of the screen, therefore the plates are made adjustable by the insertion of shims up to ½ in. thick under the lower edges. Extended experiments were made before the installation of this screen and resulted in the determination of the angle above mentioned which will probably be maintained, although the provision here described permits it to be quickly and easily changed if necessary. The screen plates are of commercial manufacture and can be quickly replaced when necessary, but they show such durability that it is believed that the use of ordinary steel will be continued instead of manganese steel, which would cost about four times as much.

The material passing over the first screen strikes a right-angle steel shelf just below it and covers the same with a cushion of broken stone which protects the surface of the steel and soon acquires a permanent slope on which all the succeeding material stops and then falls again to the next screen, from which it is deflected to a second shelf, and so on, this stopping at every step and zigzagging down from top to bottom at a moderate velocity.

The large stones rejected by the screens are discharged from their upper surface to a 24-in. belt conveyor 92 ft. long, driven by a 10 H. P. motor, and are returned to the finishing rolls.

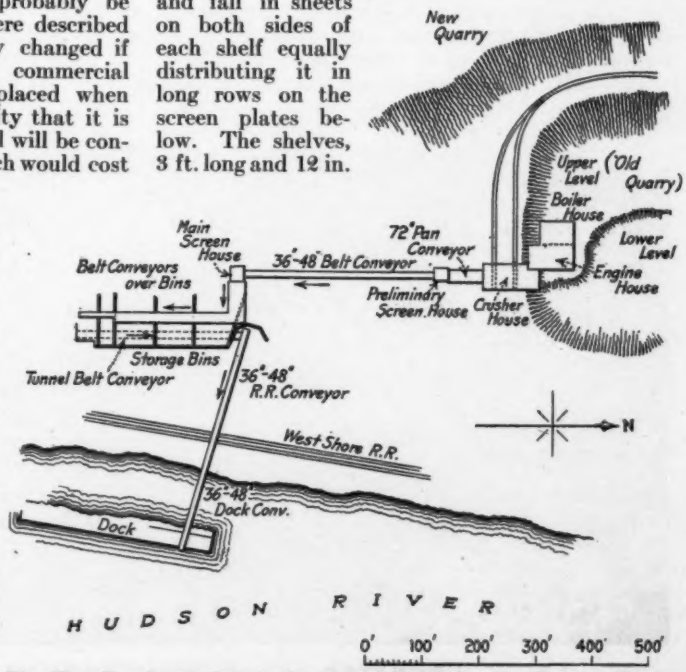
The remainder of the stone, passing through the screens, is caught on an inclined bottom plate provided with transverse angles which check the speed



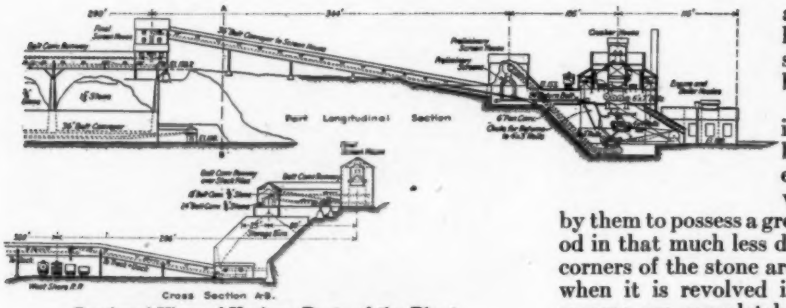
95-C Bucyrus Shovel Loading Special Dump Cars.

of the stone sliding down over it to a second chute delivering to a 36-in. belt conveyor 362 ft. long that is inclined about 10 deg. to the horizontal, driven by a 100 H. P. motor, and has a capacity of about 800 yd. per hour. It discharges its burden to the receiving hopper in the top of the main screen house about 60 ft. above the point of delivery.

This hopper delivers to a distributor which is a steel plate box containing two inclined tiers of narrow horizontal shelves on which the broken stone falls and accumulates in full width heaps with sloping sides over which the succeeding stones slide and fall in sheets on both sides of each shelf equally distributing it in long rows on the screen plates below. The shelves, 3 ft. long and 12 in.



Plan View Showing the Relative Location of Quarry, Crushing Plant and Docks.



Sectional View of Various Parts of the Plant.

wide, are provided with rack and pinion connections which give them horizontal motion in either direction so that they can be adjusted if necessary to suit changing conditions.

From the distributors the broken stone passes through an 8 x 12 ft. rectangular box about 23 ft. high in which there are installed, on each side of the center line, three successive sets of screens of the same type as those described in the preliminary screen house. The screens are symmetrical on each side of the center line and each half, having a total screening surface of 192 sq. ft., can be used independently of the other and is designed to be served by two belt conveyors on each side besides a fifth conveyor on the center line which receives the ¾-in. stones from the screens on both sides.

This method of screening is considered by the owners to be more rapid, efficient and economical than the use of revolving screens and is believed by them to possess a great advantage over that method in that much less dust is produced and the sharp corners of the stone are not broken off as is the case when it is revolved in a cylindrical screen. The screens are completely enclosed, they are made of commercial plates easily secured, replaced and adjusted, the installation is compact and convenient and most of the steel work excepting the screen plates is protected from wear by cushions of broken stone thus greatly increasing its durability.

The 1½, ¾ and ⅜-in. sizes of broken stone are respectively delivered from the screens to 30-in., 24-in. and 18-in. conveyor belts 120 ft. long on centers that are driven with a speed of 400 ft. per minute and discharge their burdens to corresponding horizontal 30-in., 24-in. and 18-in. belts, 140, 210 and 275 ft. long respectively, all of which are driven at a speed of 300 ft. per minute by separate 20, 15 and 10 H. P. motors. They are at right angles to the first set of belts and carried through an

General View in the Quarry, Showing Crushing Plant in Left Background.

elevated gallery over the tops of the storage bin, about 65 ft. above its floor, discharging at any point of any bin by means of standard automatic trippers.

The storage bins have a common horizontal concrete floor 40 ft. wide and 292 ft. long. On it there are seated five reinforced concrete transverse partition walls 48 ft. high which separate it into an outside extension and four independent bins enclosed by a vertical wall 32 ft. high on one longitudinal side and by the vertically excavated rock face of the bluff on the opposite side.

The widths of the belts are proportioned to the different quantities of stone produced by the crusher, namely 56 per cent of 1½ in., 30 per cent of ¾ in. and 14 per cent of ⅜ in. As the demand for different sizes of stones varies with different seasons considerable flexibility is required for the storage system and one bin is reserved for 1½-in. stone exclusively, another for ¾ in., two for ⅜ in., which is more likely to accumulate, and one large bin nearest the screen house is kept available for any size required.

In the floor of each bin there is a row of 18 x 24 in. holes 10 ft. apart on centers. Each hole is provided with a steel quadrant valve operated by a lever in the tunnel below. When stone is required for shipment, two valves are usually opened and discharge the stone on a 36-in. horizontal belt 291 ft. long, which is operated by a 50 H.P. motor and runs from end to end of the tunnel at a speed of about 400 ft. per minute with a capacity of 10 yd. per minute.

This belt delivers to an inclined 36-in. conveyor belt 170 ft. long run by a 50 H. P. motor at a speed of 350 ft. per minute which elevates the stone to a height of 27 ft. above the ground and discharges into a hopper with transverse chutes on both sides through which the stone may be loaded into cars on the railroad track below, and with a longitudinal chute through which, if the transverse chutes are closed, the stone may be delivered to the last conveyor, which has a 36-in. belt 240 ft. long run by a 50 H. P. motor at a speed of 400 ft. per minute to the end of the dock, where it terminates about 28 ft. above water level with a hopper provided with a telescopic steel chute 20 ft. in maximum length which can swing 180 deg., supported at the outer end by a boom and tackle and thus enabled to reach any part of the 500 or 600-yd. barges moored to the front or side of the dock.

A total quantity of about 15,000 cu. yd. of concrete and 700 tons of structural steel has been used and the new plant can be operated with a very much smaller force of men than would be possible under the old methods.

The general design was made by the Edison Crushing Rolls Company and the rolls were installed by it, and excepting the erection of the structural steel work all of the construction was made and the equipment installed by the Tomkins Cove Stone Company, Mr. Walter Tomkins, president, and Mr. P. K. Yates, engineer of construction.

Ninth Annual Convention of the American Road Builders' Association, Cincinnati, Ohio, December 3, 4, 5 and 6, 1912.

No question is of more vital importance to the American people than that of highway improvement. Interest in the subject is already widespread, and is daily becoming more intelligent. The American Road Builders' Association, believing that the public appreciates the economic importance of good roads and is willing to pay for them, is endeavoring to emphasize the importance of expending the funds appropriated for highway improvement to the best possible advantage. The sum annually expended for road construction and maintenance is enormous and it must be admitted that a very considerable proportion of it is used to poor advantage, if not actually wasted. Lack of foresight in the laying out of a rational and comprehensive system of highways for improvement; blunders in the selection of the type of road surface best fitted for the traffic to be accommodated, and the topographical and climatic conditions; failure to use to advantage local materials which, in proportion to their cost, will give better service than those transported great distances at correspondingly great expense; lack of appreciation of the value of cost data both for construction and repairs; inefficient organization and ignorance of the fundamental principles of economical maintenance:—all these are exacting a heavy toll from the people of the western continent. Liberal appropriations for highway purposes are being made by States, Counties and Cities, and it is of the utmost importance that the funds set aside for this purpose be wisely expended so that the public may be assured of an adequate return.

The Ninth Annual Convention and American Good Roads Congress will bring together in a great national body the foremost road building and paving experts in the United States and Canada. These men will meet for the purpose of discussing the many problems connected with highway and street improvement. To this Congress which will be held in Cincinnati on December 3 to 6th inclusive, are most cordially invited all the highway officials in each state of the United States and the provinces of Canada, the city, county, and township officials, contractors, engineers, superintendents, governors of states, legislators, freeholders, farmers, automobilists and, in fact, everyone interested in the subject.

The American Road Builders' Association was organized ten years ago and is the pioneer organization of its kind. Its membership extends throughout the United States and Canada.

General View of the Utah Copper Company's Mine at Bingham, Utah. The Height from Pit to Dome is about 3500 feet.

Unusual Stripping Operations as Carried On at the Utah Copper Co's. Mines, by Steam Shovels

UTAH, rich in natural resources, is known principally for three things, Mormons, Gentiles and the Utah Copper Co.—A Jew once said this is the only place where a Jew is a Gentile. The Utah Copper Company was organized about eight years ago for the purpose of mining and milling a large body of Copper ore located in Bingham Canyon about 28 miles from Salt Lake, carrying less than two per cent copper and a small amount of gold and silver. The total area of their loade mining claims cover 723 acres. Up to Jan. 1st, 1912, there was thirty miles of underground workings accessible. On top of the ore is an overburden averaging in thickness 106 feet. Several years ago it was decided to remove this capping with steam shovels. To date they have removed about 14,000,000 cubic yards and is being carried on at a rate of 500,000 yards per month. The total area upon which stripping operations are conducted cover 132 acres. Bucyrus shovels are used in the stripping and Atlantics shovels in the ore, the latter on account of their speed, length of reach and ability to withstand slides due to the construction of the car body. The bank where the Atlantics are at work is about 350 feet high. These shovels are double crewed and are loading about 125 standard gauge cars each 24 hours, average capacity 65 tons, moving from 14 to 30 times each shift to get the material. This tonnage could be largely exceeded if the bank could be shot from the top. This cannot be done at the present time on account of losing the levels above.

The ore body, when uncovered, will be over 1000 feet high, the depth is unknown. The developed and partially developed portion contains 301,500,000 tons of ore having an average assay value of 1.532% copper. The ore is moved from the mine to the mill over the Bingham and Garfield Ry. owned by the Company, a distance of 18 miles, having an average grade of 2½% in favor of the loads. The trains consist of 40 all steel 120,000 lb. capacity cars and are handled by Mallet locomotives weighing in working order over 300 tons. These locomotives have a draw bar pull of 107,000 lbs. working compound and 128,000 lbs. working simple. Running time between the mill and the mine 1 hour and 20 minutes.

The mills, of which there are two, are treating about 21,000 tons per day. It is first run through crushers, then through grinding mills and from there over concentrating tables where the very fine particles of copper are separated from the gangue. The concentrates run about 22% copper and are shipped to the smelter where it is converted into copper matte then shipped to the refineries where the copper, gold and silver are separated.

There are 2500 men employed on this project. The pay roll and material amounts to $250,000.00 per month.

The halftones and map give a clearer understanding of the conditions under which the operations of the Company are conducted, and show to some degree the extensive nature of the work.

During the year ended December 31st, 1911, the gross production of the property amounted to 98,436,224 pounds and after allowing for smelter deductions the net production was 93,514,419 pounds of copper; in addition to which there were produced also 40,202.9 ounces of gold, and 366,907 ounces of silver.

The net cost per pound of copper produced was 7.8655 cents. The cost for the year 1910 was 8.069 cents per pound. The profit resulting from the operations was based upon a price for copper of 12.6463 cents per pound, gold of $20 per ounce, and silver of 53.3 cents per ounce.

The net profits for the year were $6,237,928.44. $4,470,933.33 resulted from the operation of the plants in Utah, and the balance, or $1,766,995.11, was the income derived from outside investments, including the dividends received on the stock owned by the Company in the Nevada Consolidated Copper Comanpy.

Dividends paid amounted to $4,703,022. The balance of $1,534,906.44 was credited to Undivided Profits. The total amount of dividends paid up to and including the dividend distributed December 31st, 1911, amounted to $11,512,472.50.

As in past reports, the item of Undivided Profits showed a credit on December 31st, 1911, of $6,311,020.

This Surplus account is the amount received in cash from the sale of securities in excess of their par value.

On December 31st, 1911, the total issued capital stock outstanding was 1,575,000 shares.

The total authorized capital stock of the Company is 2,500,000 shares. There remain therefore unissued 925,000 shares at the close of the year 1911.

The market value of the Company's holdings in the Nevada Consolidated Copper Company is approximately $15,000,000 in excess of the figure that this investment is carried at upon the books of the Company.

UMI

General View of the Uta[illegible]ny

An improvement in extraction has taken place, as compared with previous operations, and it is expected that improvement in recoveries and reduction in cost of production will follow in succeeding years.

The ore reserves after deducting all ore mined from the property previous to the close of the year just ended amount to 301,500,000 tons of fully developed and partially developed ore.

There is every assurance that further development will prove the existence of large additional ore reserves.

The average value in copper contents of the entire deposit remaining is 1.532%. It is interesting to compare this average copper value with the average of the ore milled for the year 1911, which was 1.51%. The average for the year 1910 was 1.54%.

The mining and concentrating capacity of the property is fully 20,000 tons of ore per day, and it is expected that for the fiscal year, which will end December 31st, 1912, an output of 120,000,000 pounds of copper may result from the Utah operations.

Bingham and Garfield Railway Company

The Bingham and Garfield Railway was projected for the purpose of insuring the transportation situation, as it had been apparent that the facilities furnished prior to its building were wholly inadequate to handle the amount of ore necessary to reach the capacity of the milling plants. The road was finished and commenced operating in September, 1911, and from both a physical and a financial standpoint has proven entirely satisfactory and fully up to the predictions made at the time it was projected.

The result of operations to date indicates that with the tonnage it will be called upon to transport after the middle of the present year, it will show earnings that will indirectly result in reducing the cost of copper ¾ of one per cent per pound.

All of the capital stock of the Railway Company is owned by the Utah Copper Company.

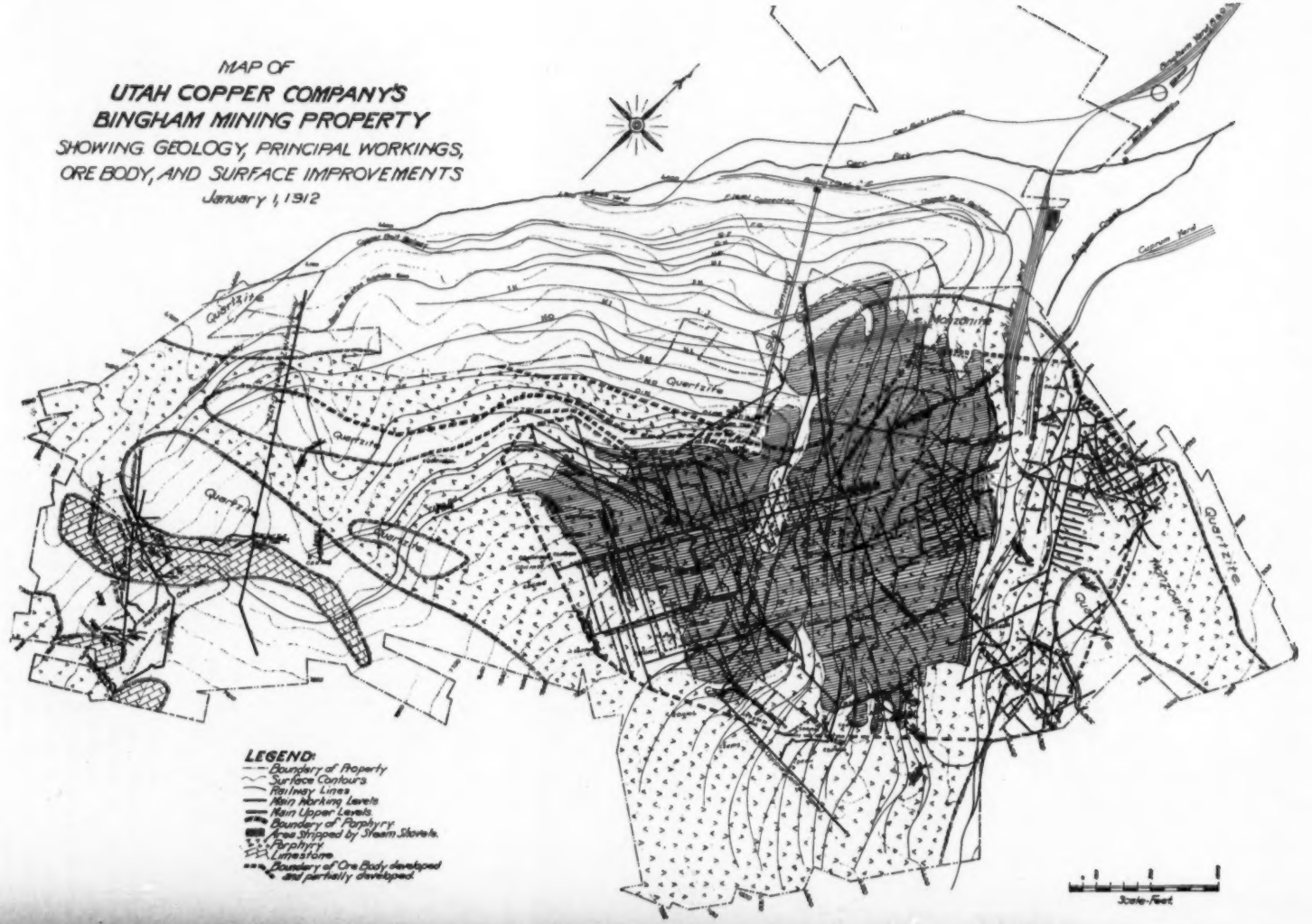
ny's Mines at Bingham, Utah

Stripping Operations

The average thickness of overburden on the Utah Group was still shown to be 80 feet, the average thickness on the Boston Group was 134 feet and the average thickness on the Pay Roll Group was 173 feet, making an average thickness over the entire ore body as developed at the end of 1911 of 106 feet. It is believed that further development on the Boston and Pay Roll Groups will result in showing reductions in the average thickness of capping, and it is expected that these will be sufficient to bring the average thickness over the entire ore body down to not exceed 100 feet.

During the year 1911, the total amount of capping removed was 5,450,604 cubic yards, or at the average rate of 454,217 cubic yards per month. During the first six months of the year, 2,352,653 cubic yards were removed, a rate of 392,109 cubic yards per month, while during the second six months, 3,097,951 cubic yards were removed, an average of 516,325 cubic yards monthly. Previous to the last report the total amount of capping that had been stripped from the combined areas of the Utah and Boston properties since the beginning of their development was 7,162,556 cubic yards. Adding to this amount the total amount of stripping removed during 1911, we have 12,613,160 cubic yards as representing all the capping removed previous to January 1st, 1912. Of this amount 9,129,170 cubic yards have been removed from the Utah Group, and 3,483,990 cubic yards from the Boston Group. The total area upon which stripping operations had been conducted previous to January 1st, 1911, was 85 acres.

The extension of the actual area completely stripped on both groups during the year 1911 amounted to 12.65 acres. The area over which stripping has been completed or partially so contains an average of a little more than 1,400,000 tons per acre, and the overburden removed to date, therefore, represents the equivalent of completely stripping over 121,000,000 tons of ore.


MAP OF
UTAH COPPER COMPANY'S
BINGHAM MINING PROPERTY
SHOWING GEOLOGY, PRINCIPAL WORKINGS,
ORE BODY, AND SURFACE IMPROVEMENTS
January 1, 1912
Quartzite
Monzonite
Quartzite
Quartzite
Quartz

Mining Operations

Of the total ore mined during the year, 74% was obtained by steam shovels from the original Utah Copper Mine; 4% was mined underground in the Utah Mine, and 22% was mined underground in the Boston Mine. The average cost of steam shovel mining for the year was 33.73 cents per ton, of which 9.12 cents was charged to cover the cost of prospecting with churn drills and of stripping expense, leaving a cost, including all general charges, except development and stripping expense, for producing shovel ore of 24.61 cents per ton. The average cost of underground mining for the year was 68.35 cents, of which amount 15.66 cents was charged to cover the cost of underground development. The cost of underground mining at the Boston Mine was considerably less than at the Utah Mine, on account of the greater rate of tonnage at which the operations at the former point were conducted. The average cost of mining all the ore obtained both from surface operations and underground operations during the year was 44.79 cents per ton, of which 12.81 cents was charged to cover prorpecting with churn drills, underground development and stripping expense, leaving a net cost for actual mining, including general and fixed charges of 31.98 cents per ton.

It is the purpose of the Company to discontinue underground mining as soon as possible, but they have not been able to do so as rapidly or as soon as they predicted in their last report.

Equipment and Improvements at the Mines

During the year there were added to the mine equipment 20 standard gauge 12-yard steel dump cars, 2 steel underframe flat cars and 2 standard gauge 50-ton Porter locomotives, making the complete list of this class of equipment at the end of the year: 22 standard gauge steam shovels, 35 standard gauge switching locomotives, 1 standard gauge Shay locomotive, 11 narrow gauge Porter and Davenport switching locomotives, 100 standard gauge 12-yard Oliver dump cars, 117 standard gauge 6-yard dump cars, 144 narrow gauge Kilbourne and Jacobs dump

Class 80 Atlantic Steam Shovel at work in the Utah Copper Co's. Mines.

cars and 4,100,000 pound capacity flat cars. There are also 11 Keystone churn drills used in drilling for development and blasting purposes.

The following steam shovel engineers, cranemen and firemen are employed on the Utah Copper Co's. work: Billy Gallagher, Buck Tierhum, Mutt Finley, Clarence Young, L. Nicholson, Jim Riley, Geo. Bassett, Jim Booth, Fatty Heagler, Harvey Forsyth, Dutch Marquette, Geo. Dempsy, Mexican Louie, and Smithy.

The Operating Officials of the Company in Utah are: R. C. Gemmell, Asst. Gen. Mgr.; F. G. Janney, Mgr. of Mills; J. D. Shilling, Supt. of Mines; D. D. Moffatt, Supt. Magna Mill; F. G. Janney, Jr., Supt. Arthur Mill; John M. Hayes, Asst. Secy. and Cashier; C. F. Jennings, Asst. Purchasing Agent.

Steam Shovel Men at Santa Rita, N. M.

American Road Congress, Atlantic City, Oct, 5, 1912.

The American Road Congress was held at Atlantic City, Sept. 30th to Oct. 5th, and was largely attended by county, city and state officials from every part of the United States, as well as some foreign countries.

There were more than thirty exhibitors at the Congress and one of the most important exhibits was made by the United States Department of Agriculture. In this exhibit there were two series of miniature models,one showing the development of road building from the early Roman roads to the types of roads now in use, and the other showing the modern types of roads such as sand clay, gravel, water-bound macadam, bituminous mecadam and brick and clay. These exhibits included models of bridges, culverts and other trench structures, as well as electrically operated models of rollers, crushers, etc., etc.

The Exhibits States of New York, New Jersey, Ohio, Montana, Virginia, North Carolina, South Carolina and Tennessee were located in the Machinery Hall Extension and afforded a great deal of information relating to the subject of road building.

It had been the intention of the Bucyrus Company to exhibit one of their 14-B revolving shovels, but owing to the pressure made upon them for the delivery of these machines to fulfill contractors' orders, found it impossible to do so.

The photographs which were on display elicited a great deal of favorable comment from the hundreds of visitors. The booth was in charge of Mr. E. G. Lewis of the New York office.

Atlantic Shovel Loading Ore at the Oliver Iron Mines.

Steam Shovels Aid in making a new Record in Lake Superior Ore Shipments.

A new record in Lake Superior iron ore shipments was made in July, when the total was 7,600,233 gross tons, against 5,221,373 tons in July 1911. To August 1, the total this year was 21,290,904 tons, which is also a record at that point in the season. The shipments by ports last month and to August 1, with corresponding figures for 1911, are given below in gross tons:

Port.	July, 1912.	To Aug. 1, 1911.	To Aug. 1, 1912.
Escanaba	836,346	1,711,806	2,478,294
Marquette	511,924	843,177	1,430,814
Ashland	771,057	1,102,263	2,103,858
Superior	2,324,324	4,698,855	6,668,655
Duluth	1,540,324	3,158,450	4,385,802
Two Harbors	1,616,258	2,549,740	4,223,481
Total	7,600,233	14,064,291	21,290,904

These great shipments have been made possible largely through the wide adoption of steam shovels.

The Excavating Engineer

[FORMERLY STEAM SHOVEL NEWS]

A Monthly Publication Devoted to Excavating *and* Allied Subjects

Contributions bearing upon the practical aspects of the above work are solicited, and if accepted will be paid for at the usual rates.

Subscriptions, payable in advance, $1.00 a year for 12 numbers, including postage in the United States, Mexico, Cuba, Porto Rico, Hawaii, or the Philippines; $1.50 in Canada.

To foreign countries, including postage, $2.00 or its equivalent, 8 shillings; 8 marks; or 10 francs.

Notice to discontinue should be written to the Milwaukee Office in every instance.

Advertising copy should reach Milwaukee Office by 10th of month, before date of issue.

Address all communications to the company.

THE EXCAVATING ENGINEER PUBLISHING CO.
Frank G. Bolles, Manager *and* Editor — 267 National Avenue
Bradlee Van Brunt, Assistant Manager — Milwaukee, Wis., U. S. A.

Our New Year's Post Card

WE have prepared an artistic post card which we hope our readers will use in wishing their friends a Merry Christmas and a Happy New Year. The subject of our pictures is apropos of the times. It shows progress. It typifies the policy of The Excavating Engineer. We want to enlarge our circulation to include every man in this broad field. May we have your co-operation in this work which will help us to make a better paper? Send the card to some friend who may become a subscriber.

The Presidential Election

The presidential election has resulted in the success of the Democratic party and on March 4th next Gov. Wilson will be inaugurated as president of the most progressive nation in the world.

The campaign was carried on with great energy on the part of all those who sought the control at Washington. The candidates were all good men, capable in a high degree, and while Gov. Wilson may not have been the man of our choice, he was at least, preferred by the majority and all should join in supporting him for the next four years.

The past election seems to have demonstrated one thing at least, and that is that a presidential election is possible without a panic in the commercial world. Notwithstanding the fierce battle which has been waged between the three leading parties, business has been on the boom in nearly every line of work and in practically every section of the country. Let us hope that the new administration will carefully weigh these facts and avoid legislative action that is likely to overthrow the splendid prosperity which we are now enjoying.

The National One Cent Letter Postage Association is pursuing an active campaign for the establishments of one cent letter postage, along with improvements and economies in the postal service. Every person in the country is interested and should write for literature on the subject to the headquarters of the association at 1004 New England Building, Cleveland, Ohio.

The Future of Electricity in Excavating Operations

Electric power has entered many fields and in nearly every instance has shown results which were satisfactory from every point of view. It has now invaded the field of excavation and it is our belief that it is destined to supercede steam in a very large degree.

We base our conclusions on an analysis of the development of the electric drive from its inception up to the present time.

Probably the earliest important application of electric power was for street car service. The difficulties encountered and the problems solved in the production of satisfactory motors and controllers were a hundred fold more difficult than the problems involved in adapting electric power to the shovel, dragline or dredge. In those days little was known of the various methods of winding electric motors for varying conditions of service. Engineers were obliged to make extensive experiments to learn just what results could be secured. Motors were crude, cumbersome and inefficient.

Now, however, all of the knowledge gained in adapting the electric motor to the vast industrial field which has been electrified, is available for the electrical engineer in applying the power to undeveloped lines. With the conditions of operation known it is comparatively easy for him to immediately decide whether a direct current series wound, shunt wound, compound wound motor, or one of the several types of alternating current motors are best suited to the work.

It was only twelve short years ago that the development of electric power for industrial purposes began in earnest. To be sure there were many small installations of motor drive in operation before the year 1900, but where the problem involved the driving of such machines as engine lathes for the working of metal there was grave doubt about the success of the electric motor. The problems were attacked, however, and solved with perfect success. It was found that with the electric drive more and harder work could be done and the structures of machine tools had to be strengthened in order to take care of the added strains due to deeper and wider cuts and to higher cutting speeds. Not alone more work was accomplished in a given time than with the old methods of driving, but economies of great importance in other directions were effected.

The largest installation up to this time probably is the steel plant at Gary, Indiana, where nearly 100,000 H. P. is utilized. In this plant there were many problems never before encountered and yet they too, have been successfully solved.

The induction type of alternating current motor is as sturdy a machine as are the machines used in the work of excavation. It will withstand tremendous overloads for short periods of time, which is a characteristic that probably will be found extremely valuable in this class of work. This fact is no less true of the modern railway or mill type of direct current motor.

While the direct current motor is somewhat more complicated in design than the alternating current motor its characteristics are better and offsets the advantages found in the simplicity of design of the latter.

The problem of adapting the electric drive to excavating machinery has not been an easy one. The duty to be performed is severe and the design of controlling apparatus as well as motors has required much study to successfully solve the problems involved.

With electric power there will be no fuel to haul; no boiler to foam; no troublesome feed water apparatus; no leaky steam pipes; and no difficult steam connections. There will be more room in the cab and the dirt and oil of the steam operated plant will be absent. The electrically operated machine will require no fireman or pumpman, the absence of which will effect a considerable economy.

It is not improbable that with the electric motor drive it will be found that more and harder work can be accomplished although the whole equipment will probably be materially lighter for a given capacity than the steam driven machine.

In the month of October several new electrically operated machines were put to work with great success and we predict that the electric drive will from now on make rapid strides in this new field of operations.

In an early issue we will have an excellent article on the electrically operated shovel and dragline. It will be profusely illustrated with views of these machines in operation in the field and also probably will contain some operating data from these installations.

Business Forecast

It is worthy of note that mercantile and manufacturing business on the whole is practically what it was at this date in 1905. Activity in the stock and bond market is just a shade below what it was at that time and banking conditions are about the same. By going back to the first of November, 1905, we will find the business situation very similar to that which we have today and in the closing months of 1905 and the opening months of 1906, we will find a series of events which, it is reasonable to presume, will be followed fairly closely in the next few months.

Our September Exports reached within a few dollars of 200 million dollars, a gain of 4 millions over September of the previous year and our imports totaled 145 millions compared with 125 millions in the same month in 1911. The Balance of Trade in our favor for September amounted to 55 million dollars compared with nearly 71 millions for the same month last year. The total volume of exports and of imports both set new high figures for the month of September. Total exports for the nine months have amounted to 1616 million dollars against 1455 millions for the same period last year and total imports have been 1333 millions compared with 1132 millions for the first nine months of 1911. For the nine months, our favorable Trade Balance totaled 283 millions against 322½ millions for the same period last year. The interesting exhibit made in our record of exports is the greatly increased volume of exports of manufactured articles and a decrease in the export of food stuffs and raw materials generally.

It was predicted that August Earnings of railroads would show material increases in both gross and net. August gross earnings totaled 277 million dollars, a gain of nearly 26 millions or 10% over August 1911; and net earnings totaled 99 million dollars, a gain of more than 11 millions or 13% over the same month of the previous year. This increase in gross earnings and the still greater increase in net is improving the railroad situation, and a few more months, showing the same satisfactory figures, will lift the railroads out of the depression in which they have been floundering for many months past. The increase in gross is brought about, of course, by an increased tonnage, made up of both farm products

and manufactured articles. The greater increase in net must be accounted for by exceptional management on the part of those who operate the great railway systems of the Country.

The net shortage of Freight Cars at the last report on October 10 had increased nearly 14,000 cars over the report issued two weeks previously. This left an actual shortage of more than 31000 cars which creates an acute situation. It will take months and months to move the present crops, and in the heavy manufacturing lines shortage of cars is cutting down deliveries and, therefore, sales to an enormous degree. Once more we are learning a lesson of "unpreparedness", and it is to be hoped that business men generally will take advantage of the next period of dull business, whenever it comes, to prepare for the increased volume which is sure to follow either a short or a long depression. It has been estimated that we might be doing 10% more business today had we been prepared for present demands.

The handicap to an otherwise clear business situation remains the number of Business Failures. During September, 1083 concerns failed with total liabilities of nearly 20 million dollars while only 887 failures were recorded for September 1911 with liabilities of less than 15 million dollars. Another authority reports 1000 failures for September with more than 25 million dollars liabilities. The actual figures are probably somewhere between these two estimates, but in any case, business failures have been increasing rapidly during the past few weeks and the greater part of these failures have been among concerns dealing in articles of daily consumption and not manufacturers of and dealers in luxuries. This would indicate unsatisfactory collections and business men should take care during the next few weeks not to increase lines of credit too freely and all past due items should be followed up closely.

The Clearings of Banks for September totaled 13 billion dollars, a gain over last year, and exclusive of New York City, clearings amounted to 5731 million dollars against 5406 million dollars for the same month last year. Clearings have shown a gain over the corresponding month of 1911 for the past three months, indicating that business has continued to expand.

Shipment of Iron Ore from the Lake Superior district have exceeded 7 million tons per month for several months and a new October record is expected. The production of pig iron has averaged nearly 2500 thousand tons per month for the past six months or about 20% over the same period of last year. It is expected that pig iron production will exceed 2500 thousand tons for each of the remaining months of this year and the product is being taken up as fast as it is available.

Production of Finished Steel for October is expected to reach about 3 million tons which will reduce the visible supply of pig iron. All of the mills of the Steel Corporation and of the Independents are running as nearly full capacity as the labor situation will allow. There is a real shortage of labor at nearly all points and the production for the next few months will depend almost wholly upon the labor supply. Prices are advancing and mills are sold up far into next year. The earnings of all Companies are increasing rapidly.

The output of Lead, Zinc and Spelter for the year to date shows a substantial gain over last year. The leading zinc market reports receipts to date exceeding last year by 15% and shipments 10% above those of 1911.

The shipment of Anthracite Coal for Septemper amounted to 5876 thousand tons, a gain of 145 thousand tons over the same month last year. Shipments for the first nine months of 1912 have been 45 million tons against 51 million tons for the first nine months of 1911. The decrease of more than 6 million tons in shipments is wholly accounted for by the shut-down last Spring. The demand for both anthracite and bituminous coal is strong and prices are advancing.

The Coke market is firm and the Connellsville district reports 31 thousand ovens in blast, producing 400 thousand tons per week and shipments running more than 11 thousand cars per week.

The production of Copper for September showed a slight decrease as compared with August but a gain of 20% over the same month of last year. The visible supply in the United States has increased to 63 million pounds and the World's visible supply to 162 million pounds. Copper demand is good but not so strong as a few weeks ago. Quotations on electrolytic copper are a shade lower.

The Investment Market has improved and 10 million shares were traded in on the New York Exchange during September compared with 9 millions the previous month and 17 millions for September last year. Stock prices average somewhat lower. Total bond transactions for the month were 45 million dollars compared with 43 millions for August and 63 millions for September, 1911. Bond prices average nearly 2 points below the first of the year and a point and a half below quotations of a year ago. Nine months' transactions in stocks totaled more than 95 million shares against 92 millions for the same period last year. Bond sales for nine months total 546 million dollars against 639 millions last year and 484 millions in 1910.

Building Conditions are not as active as they were earlier in the year and operations were for September much below the showing of the same month in 1991. As estimates of building conditions are based largely upon permits issued, the explana-

tion of this situation is that an unusual number of large buildings were started during the summer months, and although these operations continue, new buildings being started are less in number and in value.

The Crop Situation is so satisfactory that nothing of consequence can be added to the information already possessed by most business men. Our combined authorities estimate the principal crops as follows: Total wheat, 720 million bushels; Corn, 3050 million bushels; Oats, 1350 million bushels; Rye, 35 million bushels; Barley, 225 million bushels; Buckwheat, 18 million bushels; Flaxseed, 29 million bushels; Cotton, nearly 14 million bales; Tobacco, 975 million pounds; White potatoes, 400 million bushels; Hay, 72 million tons; Rice, nearly 24 million bushels. All of the important fruit and vegetable crops are setting new records and the farm output for the year is all that can be desired. The total product of the farms is estimated at 10 billion dollars in value. The five principal grain crops show a total value to the producers of 3342 million dollars compared with 2762 million dollars valuation placed upon the same crops in 1911. The value of the cotton crop to the producers is estimated at more than 800 million dollars; the hay crop, 852 million dollars and the potato crop 204 million dollars. The total value to the producers of the crops of corn, wheat, oats, cotton, potatoes, hay, rye and barley will exceed 5 billion dollars while the value of the same crops last year was estimated at only 4½ billions. There are hundreds of important crops not considered in these figures, but on these crops alone growers will realize more than 500 million dollars in excess of their income for last year.

The Prosperity of the country is real and the condition of business satisfactory. The one big handicap which remains is the scarcity of labor. Sufficient labor is not obtainable in any of the large manufacturing centers, and the coal producers are unable to get out enough coal to supply the demand on this account.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review in this column such books and catalogues as are sent to us.

Chicago Portland Cement Co., Chicago, Illinois.—Concrete in the Country; 6 x 9″ standard size, 114 pages. This booklet illustrates and describes a multitude of uses for concrete. It gives very interesting details of the mixtures required for various classes of work.

The Alexander Milburn Co., 1420 W. Baltimore St., Baltimore, Md.—Catalogue 6½″ x 9¼″, 48 pages. Illustrates and describes the Milburn Light. Another catalogue from the same concern, 6¼″ x 9½″, 24 pages. Illustrates and describes the Milburn Oxy-Acetylene Welding and Cutting Apparatus.

Dobby Foundry and Machine Co., New York, Niagara Falls.,—catalogue 6 x 9″ standard size 256 pages. Illustrating and describing derricks, hoists and general contractors' supplies.

Chicago Portland Cement Co., Chicago, Illinois.—6 x 9″ standard size 12 pages, a monthly publication devoted to the various uses of cement. Sent free on application to the company.

Chicago Portland Cement Co., Chicago, Illinois.—6 x 9″ standard size 12 pages. Cement, Sand and Gravel for Concrete. An illustrated booklet relating to the use of cement.

The Wm. Powell Co., Cincinnati, Ohio.—Catalogue 5½″ x 7⅞″, 327 pages, cloth bound. Illustrates and describes the steam specialties, valves and fittings made by them.

Independent Powder Co., Joplin, Mo.—"Dynamite", a book 5½″ x 7½″, 156 pages. Describes the methods used in the manufacture of explosives and a complete list of the various kinds they make. The book is profusely illustrated and shows interesting uses to which explosives are adapted, and how to use them. Sent free by applying to the company.

Haggard & Marcusson, Chicago, Illinois.—Three pamphlets describing the Tiger Steel bunk in its various forms and giving a list of important concerns that have adopted the same for their requirements.

McCormick Building, Chicago, Ill.—Brochure 3 x 6. Describes and illustrates their flat bead malleable fittings.

Atlas Portland Cement Company, New York City.—We have received a copy of the November issue of the Atlas Almanac 5 x 6¾, 16 pages and cover. This is a bright little publication published by this concern and sent free to those who wish it.

Marsh & Co., Old Colony Building, Chicago, Ill.—A bulletin of contractors second hand machinery 9 x 11½, four pages, containing a list of second-hand machines available for immediate shipment.

Erie Machine Shops, Erie, Pa.—Catalogue 6″ x 9″ standard size, 20 pages listing and describing the steam road roller manufactured by this concern.

Western Wheeled Scraper Co., Kansas City, Mo.—Catalog 6¾″ x 10″, 20 pages illustrating and describing several types of the Aurora rock and ore crusher. It also illustrates and describes the Western portable telescope bins, revolving screens and road machinery.

Heath & Milligan, Chicago.—"Fifty Years of Evidence", a book of testimonial letters, 12″ x 14¾″, 32 pages. This is one of the most convincing pieces of literature we have seen for many months. It contains more than 50 letters reproduced full size and printed in original letter head color and paper combinations. Some of these letters come from concerns who have been customers for 50 years. It is a work of art.

Clapp, Norstrom & Riley Change Address

Clapp, Norstrom & Riley, General Sales Agents of the Western Wheeled Scraper Company and the Davenport Locomotive Works, who have for the past five years maintained a branch office at No. 103 3rd Ave. No. Minneapolis, have opened up new offices at No. 1308-9-Pioneer Bldg., St. Paul, where Gus Norstrom will be glad to receive friends. The Minneapolis office has been discontinued permanently.

What They Think of The Excavating Engineer

Birmingham, Ala., Oct. 26th, 1912.

"I have just gotten a chance to look over the Excavating Engineer and I must say it is quite an improvement over the Steam Shovel News both as to general appearance and the newsy contents. I am decidedly pleased with the cover as it is certainly a representative of the contents of the magazine and bears out fully the name." E. L. Byron.

Ft. Bidwell, California.

"A vast improvement in your last issue. Would like to see some articles and cost of irrigation canal excavation by shovels, etc." Chas. Kirby Fox., Chief Engr., Irrigation Co.

Can any of our readers send us some data which we may publish along the lines suggested by Mr. Kirby Fox.

Dunmore, Pa., October 15, 1912.

"I have just received my first copy of the Excavating Engineer and appreciate it very much. I enjoyed reading the Steam Shovel News but consider this far superior. I hope to be able to contribute something to help push the good work along." E. W. Jackson.

Lockport, Ill., December 23, 1912.

"Received The Excavating Engineer, for October and think it is clean, up-to-date and interesting. Just the magazine for contractors." Geo. T. Dowse,
Supt. Lincoln Park Black Soil Dept.

Fontana, Wisconsin.

"Your magazine came some time ago and I consider it a great improvement over "The Steam Shovel News" although that was good." Fred C. Simmonds.

London, E. C., October 21, 1912.

"Thanks for the initial copy of the Excavating Engineer. I want to congratulate you over the neat appearance of this magazine, which is full of most interesting news, and the illustrations are splendid. I shall take pleasure in reviewing it in our next issue, and I think that we will be able to use some of the matter in the 'Precis' section of our paper, of course, giving credit to you." The Mining Magazine,
Edgar Rickard, Business Mgr.

New York City, N. Y., October 30, 1912.

"We have read with interest the October issue of the Excavating Engineer, and have found the contents thereof most excellent."
American Society of Engineering Contractors.

Milwaukee, Wis., Nov. 2, 1912.

"I took your November issue home last night and read it from cover to cover and it certainly is very interesting, and your editors; Mr. Bolles and Mr. Van Brunt are open to congratulations."
Chain Belt Company, C. Messinger, Advertising Mgr.

Minneapolis, Minn., Nov. 5, 1912.

"Please accept our sincere thanks for the copies of "The Excavating Engineer," and we want to congratulate you most heartily upon the remarkable effectiveness of this publication. The type matter is of great interest even to the layman, and the photographs which you have obtained of your remarkable excavators and machinery are perfect. We are positively confident that the returns from this publication will be exceptionally gratifying." Bureau of Engraving, Inc.,
E. S. Smith, Dept. Sales Mgr.

Petoskey, Mich.

"I am much pleased with the paper. I have read the Steam Shovel News for a great many years and was well pleased with it."
Clifford A. Colin, Steam Shovel Engr.

Los Angeles, Cal., October 21, 1912.

"Your present publication is an improvement over the Steam Shovel News. We have heard some nice compliments paid you by our customers regarding news items, paper used and general appearance." N. B. Livermore & Co.

Brooklyn, N. Y., Oct. 22, 1912.

"I have received the very interesting copy of Excavating Engineer." M. J. Dady, General Contractor.

Beaumont, Texas, October 21, 1912.

"My compliments on your October issue. Better and more of it." A. L. Nelson, Civil Engineer.

Deadwood, S. D., October 16, 1912.

"We acknowledge receipt of October number of The Excavating Engineer and are very much pleased with the change and consider it very valuable for the useful information contained."
Wasp No. 2 Mining Company, Mining.

Peekskill, New York.

"The Engineer is splendid both as to contents and letter press. I like top notchers and the Engineer looks that way."
Henry S. Reel, President,
Peekskill Stone Company.

Maynard, Minn., October 19, 1912.

"The Excavating Engineer is a very practical shovel paper and is up-to-date in every respect."
Geo. C. A. Gj'evre, Cranesman.

Stewartsville, N. J., Oct. 21, 1912.

"The changes made in your publication are a decided improvement." Edison Portland Cement Company.

Roanoke, Va., October 17, 1912.

"The Excavating Engineer received and am well pleased with the change." Jas. A. Dyer,
Superintendent Va. J. C. & C.

Atlanta, Ga., November 20, 1912.

"We acknowledge copy The Excavating Engineer. It looks good to us." W. E. Austin Machinery Co.,
A. P. Robinson, S. P.

Irrigen, Ore., October 17, 1912.

"The Steam shovel news was always a welcome visitor in our office and it was hard to see how it could be improved, but you seem to have done so in the Excavating Engineer."
Oregon Land & Water Co.,
W. R. Walpol, Jr., Irrigation Engr., Supt.

Cincinnati, Ohio, October 18, 1912.

"I for one greatly appreciate the changes in your October issue and think to be the newsiest journal of its kind in print."
C. A. Sears, Shovel Engineer,
With C. & O. of Ind. R. R.

Seattle, Wash., October 26, 1912.

"I have read the Steam shovel News for five months and I like it very much." H. H. Conrad, Steam Shovel Engr.

Powell, Wyo., October 28, 1912.

"I like your changes in the Excavating Engineer."
Verney W. Russell, Civil Engineer.

Dundas, Ont., October 14, 1912.

"I have been a reader of your publication for some time, and look for it regularly as I find many good pointers in it. In fact of the journals which we receive it is one of the most popular and the new issue is certainly a big improvement."
Jas. D. Small, Quarry Operator.,
Doolittle & Wilcox, Limited.

UMI

Bucyrus Long Boom Revolving Shovels

The 150-B is the smallest of three sizes of long boom revolving shovels which the Bucyrus Company has designed to satisfy an increasing demand for a machine adapted to stripping the over-burden from coal, iron ore, stone quarries, phosphate rock and other deposits. The features of this type of shovel, the unusually long reach, the high lift and the full circle swing, enable it in a single operation to dig the over-burden to a far greater depth than any other type of shovel and to deposit it well to one side of the cut. This eliminates the heavy expense of rehandling the material which heretofore has been necessary.

When opening up a new field this shovel first digs a wide thorough-cut. The ore or coal thus uncovered is mined as the shovel progresses. In returning on the second cut the over-burden is deposited in the open space thus left. This design not only permits the shovel to dig a much wider and deeper cut than an ordinary type of machine is capable of making, but simplifies operations as it is unnecessary to switch it around at the end of each cut. The field of this type of shovel is not limited to mining. There are many conditions such as are found in canal or general drainage work where the machine may be used to great advantage with regular equipment or with an auxiliary equipment of a drag line boom and bucket.

The unusually great leverages, due to the long boom, which are developed in this type of shovel while digging and swinging, naturally result in great strains upon the revolving frame. The 150-B has heavy roller beams which maintain its rigidity.

150-B Bucyrus Shovel Stripping Coal Deposit for the Markham Coal Co., at Pittsburg, Kansas.

This is unique with Bucyrus shovels and insures the revolving frame keeping its shape after years of usage.

The base is unusually heavy in construction. Anyone familiar with this class of work knows that truss rods under the base are continually interfering with the track. On Bucyrus shovels these are dispensed with, the beams being specially reinforced in other ways to take care of the stresses.

The four four-wheeled trucks are of special equalizing type. Instead of being rigidly mounted in four bearings, the two axles are supported at but three points, allowing the truck to accommodate itself to unevenesses in the track. This point has additional importance because of the saving thus made possible in track maintenance.

The inequalities of the ground are taken care of by an equalizing beam running across the shovel under one end of the base. This beam is joined at its middle point to the base and one truck is mounted at each end. This puts the shovel while moving on a three point support which relieves the otherwise great strains due to uneven ground. Jack screws at each end of the beams are set against the base when the shovel is digging thus relieving the beams and carrying the strains directly to the trucks. This device is simpler and more reliable than any other equalizing device known. It does not get out of order and give trouble in winter as hydraulic cylinders are apt to do, and furthermore, may be handled by any laborer.

The 150-B shovel is the quickest swinging shovel of this type built. The machinery is heavily constructed and firmly held down. A friction clutch prevents the over-straining of the gears and shafts in the event of the operator stopping too suddenly.

The main machinery is of the same heavy simple design which has been so long and so favorably known on Bucyrus shovels and the propelling machinery is the most powerful of all revolving shovels of this size. It is the standard chain drive so arranged that each truck can be driven separately in order to turn corners.

Abstract of Specifications of 150-B

Capacity of dipper	2½ cu. yds.
Length of boom	60 feet.
Length of dipper handle	38 feet.
Clear lift from rail to dipper door when open	40 feet.
Width of cut at 8 ft. elevation	136 feet.
Level floor	92 feet.
Radius of dumping	74 feet.
Length of revolving frame	37 ft. 3 ins.
Size of main engines	10 ins. x 12 in.
Size of swing engines	8 ins. x 8 ins.
Size of boom engines	7½ ins. x 7 ins.
Shipping weight (approximately)	137 tons.
Working weight (approximately)	150 tons.
Water tank capacity	1460 gallons.

This type of shovel is also made in other sizes as follows: 175 B-3½ cu. yd. dipper with 75 foot boom and 275-B with 5 cu. yd. dipper and 90 foot boom.

The "Tiger" Steel Bunk

The "Tiger" steel bunk, as here shown, is strictly a twentieth century idea, being camp equipment on a sanitary basis. The old style wooden bunk filled with straw, or old style wooden cots, were uncomfortable and unsanitary in the highest degree. These new steel bunks appeal to the men, as the wire link spring fabric affords a most comfortable sleeping surface and is sanitary in the highest degree. A cotton top excelsior pad is all that is necessary in connection with the spring to make a comfortable sleeping surface, and this addition to a camp equipment is highly appreciated by the men. In these days when labor is so scarce this is an exceedingly important feature, and is being appreciated by the employer as well as by the men. The framework of the bunk is made of very strong angle steel, thoroughly braced at all joints. The sleeping surface is a wire link fabric, with oil tempered helical springs at each end, which are elastic and practically indestructible. The bunks are made in the double deck or single deck design, and either double width or single width, as may be desired. A double width, double deck, will afford sleeping accommodations for four men and needs very little space. These are all covered with a rustproof black enamel. The bunks are shipped k. d., and are easily set up by inserting a few bolts. They are so reasonable in price that one or two shifts of a camp with wooden bunks actually cost more than an equipment of steel bunks. Many large contractors have adopted this style of bunk and find it very satisfactory. They are manufactured by the Haggard & Marcusson Company, 1115 West 37th street, Chicago, Ill.

Double Deck "Tiger" Steel Bunk

Continental Dump Cars

There is a vast difference between the Dump Cars built years ago and the product of to-day of the Continental Car & Equipment Co., manufacturers of the "CONTINENTAL" Dump Cars.

Their present car is frequently referred to among Contractors and other users of this class of equipment as the "EFFICIENT DUMP CAR", the car that will stand up under the work, no matter what the conditions. It surely is a relief to a contractor to know that he has a plant which he is sure will not cause him trouble and which will or is bringing in profits.

While it is true that their present car is more costly than the old type, it must be remembered that this company has expended a large sum of money to build the most rugged and best Dump Car and the improvements which have been incorporated in their cars have necessarily increased the cost of building them. It will be remembered however, that the additional price paid by purchasers for a good car is more than offset by the additional efficiency and the smaller repair bills, which means more efficiency, and in the end more profits.

The general design of the present "CONTINENTAL" Dump Car is the same as years ago, with but few changes. The improvements, however, consist of better and stronger materials and the strengthening of members of the cars that have shown tendencies to weaken under abnormal strains. The woodwork used throughout is of the best quality Southern Indiana White Oak. The wheels have proved to be exceptionally strong and in the ten years that they have been manufacturing dump cars, the company claims that less than 5% of the wheels have worn out. At the present time 108 4-yard cars built in 1903 are still working for the Pinkerton Construction Co. at Webster, Mass. on the new Grand Trunk Line. The original purchase of the Pinkerton Construction Co. consisted of 125 four yard cars. It is known that the 125 cars have handled over three and one-half million yards of rock and earth, which means that each car has handled twenty-eight thousand yards, and that each car has been dumped and righted seven thousand times.

The present product of the company is a great improvement over the cars above referred to and they should beat the record of the older cars.

The more recent improvements in these dump cars are as follows:

Increased thickness of oak timbers in the floors from 2½" thick to 3" thick, and in the doors and ends from 2" thick to 2½" thick.

Equipping the doors and ends with protecting angles, and two heavier truss rods on each door.

The patent end bracing and door arm arrangements give the ends of the cars exceptional strength in resisting loads from pushing the ends out which permits a large door displacement when the car is dumped. It is claimed that no other dump car on the market has as large a door opening.

The dumping angle has been increased from 45 degrees to 48 degrees.

The use of malleable castings throughout in place of grey iron castings.

We reproduce a photograph taken of a train of "Continental" 4-yard Dump Cars, eight of this type having recently been shipped to Spain.

A general catalog of the Continental Car and Equipment Co. giving full information concerning its products may be had by addressing them at 45 East Seventeenth Street, New York City, N. Y.

Pointers for Engineers and Firemen

Don't forget to look at the water-gauge or to try the gauge-cocks the first thing in the morning.

Don't forget to open the drip-cocks before opening the throttle, which should only be just started from its seat to allow the cylinder to warm up and discharge water.

Don't neglect to start the blow-off every morning, before pulling forward the banked fire, to clean out any sediment that may have accumulated in the blow-off pipe from the use of muddy feed-water. Once a week will suffice for good water; and

Don't forget to blow off boilers, surface and bottom, if so arranged, at stated times, to suit the nature of the water in use.

Don't forget to lift the safety-valve off its seat at least once every day, nor neglect to rig a lanyard from the end of the lever to a convenient place for this purpose.

Don't neglect to provide means for quickly closing the water-gauge valves when the glass breaks, if they are not automatic.

Don't forget your regular times for firing and for cleaning fires, and don't allow holes to burn in the fire-bed.

Don't let the ashes accumulate under the grate—choking burns the bars; have stated times for cleaning.

Don't forget to look at the water-gauge or to try the gauge-cocks often, and don't fail to regulate the running speed of the boiler-pump or injector to suit the requirement of an even water-level. A constant feed is best.

Don't forget to regulate the dampers and doors exactly to produce an even rate of combustion; if automatic dampers are in use, they should be often examined.

Don't neglect to blow out the steam or water gauge connection and also the pressure-gauge connection as often as needed to keep them free from obstruction.

Don't neglect to clean boilers at proper times to suit the kind of water used, by first drawing the fires, and, allowing sufficient time to cool the walls below damaging heat by opening the doors and dampers; then blow out and open the man and hand-hold plates, and scrape out the scale and slush with a long hoe, and wash out with a strong stream of water from a hose.

Don't forget to see that the blow-pipe is clear of obstruction after cleaning boiler by drawing water through it.

Don't neglect to clean the boiler-tubes as often as once a week, and in some cases twice or three times a week, according to the draught. A strong draught deposits less ashes in the tubes than a weak one.

Don't neglect to pump up your boiler to the upper gauge-line when stopping the engine at night. Start the pump before closing the throttle.

Don't forget to anticipate the stopping of the engine by throwing open the fire-doors, partly closing the draught-doors, and opening the dampers and by spreading a little coal over the fire to prevent the sudden rising of the steam-pressure; then clean and bank fires.

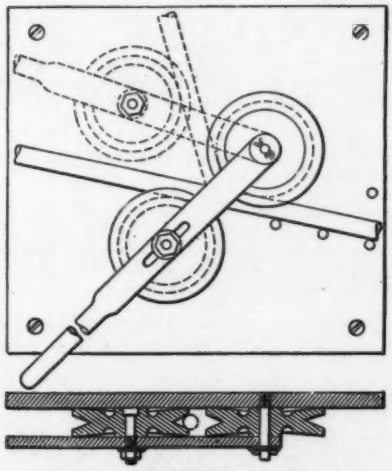
Don't hang any other piece of iron on the safety-valve lever to stop sizzling. Its a dangerous practice. If the valve leaks regrind it.

Don't neglect to search for and find the cause of any unusual occurrence, noise, or knocking in the engine or boiler-pumps, nor put off the remedy to some more convenient time. To-day's doctor may prevent to-morrow's disaster.

Device for Bending Pipe

For bending pipe without flattening it, the device here shown is suggested by a correspondent of Engineer.

The wheels are made of cast steel and bear on the pipe top and bottom, thus keeping it from



Bending Pipe Without Flattening.

flattening. By this means 1-in. pipe has been bent to a radius of 5 in., and by a little practice it is possible to bend ½ to 1½-in. pipe to almost any shape.

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Alabama

Jack H. Massey is employed at present by the Republic Iron & Steel Co. He is operating a Marion shovel in their mines at Rickey, Ala.

BIRMINGHAM DISTRICT

Toney & Lawler have just installed a 65-ton Bucyrus on their L. & N. work near New Castle, Ala. They are also operating a Little Giant Vulcan shovel on this work.

Marshall & Pack have just installed a 65-ton Bucyrus on their L. & N. work near Warrior, Ala. They are also operating a 45-C Bucyrus on this work.

The National Construction Co. of Birmingham have just purchased through the Birmingham office of the Bucyrus Co. an 18-B revolving shovel for their L. & N. work near New Castle, Ala. They are subing under the Asheville Construction Co. and have about 50,000 yards to take out.

Howard Carland of J. C. Carland & Co. was a recent visitor in Birmingham and reports that he will complete his L. & N. work near Cullman, Ala. in 60 days. He now has his eyes open for some more business and states that there will be some fine work come up in this territory within the next 90 days.

Paul and Henry Sub-Contractors under J. C. Carland & Co. at Ciullman, Ala. are certainly making the dirt move these days with their 70-C Bucyrus.

The contractors on the L. & N. work have experienced quite a difficulty for the past six weeks on account of the shortage of water due to the long dry spell, but every one was made happy last week by the heavy rains. Now everybody can wash boiler and make steam.

Cedar Creek Mill Co. are just installing a 14-B Bucyrus revolving shovel in their brick plant at Fish Pond, Ala. The above company are one of the largest lumber concerns of the south and just lately they have discovered on their property a very high grade of clay and are now manufacturing brick.

Mr. John Elliott erecting engineer for the Bucyrus Co. has just completed installing a 14-B shovel for the Cedar Creek Mill Co. at Fish Pond, Ala.

Reynolds-Henderson & Co. at Morris, Ala. report that their 14-B is still moving the rock. This company encountered more rock than they figured on but are in hopes that they will strike easier digging in their next cut. J. P. Lensay is running the shovel for this concern.

The Dixie Construction Co. of Nasville, Tenn. are getting their plant started on their new N. C. & St. L. Ry. work near Bridgeport, Ala.

The Dailey Construction Co. have about completed their N. C. & St. L. Ry. work at Carpenter, Ala.

California

Santa Barbara—R. H. Gaud, Santa Barbara, is stated to have received a franchise from the Council to build an electric railway in Santa Barbara.

Los Angeles—Plans are being made by the Pacific Electric Ry. Co. (Geo. E. Pillsbury, Ch. Engr., Los Angeles) for an extension on the east side of Glendale.

San Diego—It is reported that the L. A. & San Diego Beach Ry., known as the La Jolla line, will be electrified at a cost of about $100,000.

San Bernardino—Surveys are reported to have been completed for a new line of the Santa Fe R. R. from San Bernardino to Keenbrook, through Cajon Pass; probable cost, $2,000,000. I. L. Hibbard, Div. Supt., Los Angeles, Cal.

Los Angeles—Application for a charter will be made by the Los Angeles Municipal R. R. Co., it is stated, to build a municipal railway from the city proper to the harbor district of Los Angeles. Capital, $5,000,000.

Modesto—Arrangements are being made by the Tidewater & Southern R. R. Co. to extend its line at once from the main Modesto-Stockton line at Stewart's station, 7 miles north of Modesto, east to Riverbank and Oakdale. J. H. Wallace, Ch. Engr., Stockton.

Tulare—Contracts have been awarded by Big Four Electric Ry. Co. to Hahn & Son, San Francisco, for the grading of 41 miles of its line. The first section to be built will be between Tulare, Woodville and Porterville.

San Francisco—The California, Shasta & Eastern Ry. Co., is incorporated, it is reported, to build an interurban railway from Anderson to Ingot, via Bella Vista, a distance of 28½ miles. Capital, $600,000. Directors S. E. Brotherton, Felix T. Smith, W. T. Barnett, Paul A. McCarthy, F. D. Madison, Platt Kent and V. W. Vincent.

Los Angeles—Press reports state that plans are complete for double-tracking the Southern Pacific lines into California, a complete rehabilitation of 100 miles, of rail, roadbed and other improvements on the Ogden and Sunset routes. Judge Robert S. Lovett, 165 Broadway, New York City, is chairman of the Board of Directors of the company.

Georgia

Demarest—Mr. W. J. Pearce is running a 60-C Bucyrus shovel at Demarest, Ga., and says "it is giving perfect satisfaction".

Columbus—The Columbus, Chattahooche Valley & Gulf Railway Company has begun surveys on its 180-mile interurban railway between Columbus and Atlanta. It is not decided yet whether steam or electric power will be used. John D. Little, Atlanta, Ga., is interested.

Knoxville—The Callahan Construction Co., Knoxville, has been awarded contract by the Southern Railway for converting into an open cut the Pine Mountain tunnel, which is about 350 feet long, and is located on the Atlanta-Columbus line.

Atlanta—The Dickenson Construction Company has been awarded contract for the new street railroad line of the Georgia Railway & Electric Company, Atlanta, from Atlanta to Stone Mountain.

Illinois

East St. Louis—The St. Louis, Chester & Thebes Ry. Co. has been incorporated with a capital of $100,000, to operate a railroad from East St. Louis to Thebes, through the counties of St. Clair, Monroe, Randolph, Jackson, Union, Alexander, Perry, Franklin and Williamson. The principal office to be at East St. Louis. Incorporators: C. F. Stephens, St. Louis, Mo.; A. B.

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Corwin, St. Louis, Mo.; W. J. Lewis, East St. Louis, Ill.; J. N. Sparling, East St. Louis, Ill.; G. W. Holley, East St. Louis, Ill., and others.

Freeport—The Freeport Railway & Light Co. is stated to have received a franchise from the Council to double-track its line on Taylor Ave., in Freeport. Knox Engineering Co., Ch. Engr., Freeport.

Decatur—The contract for steel work and construction of new Wabash R. R. repair jobs is reported awarded to the Decatur Bridge Co. for $175,000.

The above photograph illustrates a 70-ton Giant C boom Vulcan shovel owned by the Lincoln Park Commission. This shovel is used in excavating rock from the old spoil pile of the Drainage Canal near Lemont, Ill. This machine was built in 1903 and has just been thoroughly over-hauled under the supervision of G. T. Dowse, Supt.

Indiana

Muncie—It is reported that definite plans for the construction of the Honey Bee line from Newcastle to Muncie have been made and that actual work will be started and rushed to completion.

South Bend—The South Bend & Northern Indiana Railway Company is taking bids for electric railway ten miles long from South Bend to Mishawaka, Ind., double track, estimated to cost $50,000,. C. D. Emmons, general manager, South Bend, Ind.

Indianapolis—The Interstate Public Service Company of Indianapolis, has been incorporated with a capital stock of $3,000,000, and proposes to finance and operate in Indiana and elsewhere street and interurban railroads, electric light and power plants and other similar public utilities. The directors are: Malcolm E. Thornton, L. Ota Heikes, J. Fred Doyle, and others, all of Chicago, Ill.

Kansas

Ponca City—The Interstate Interurban Railway will apply for charter in Oklahoma to build a 50-mile electric railway from Arkansas City to Ponca City. Capital stock, $550,000. O. L. Brown is interested.

Kansas City—Plans are being made by the Kansas City & Fort Scott Electric Railway to begin about Nov. 1st the construction of its 86-mile electric railway between Kansas City and Rosedale, Stanley, Louisburg, Pleasanton, Spring Hill, Linton, Prescott, Fulton, Hammond and Fort Scott, Kansas. M. M. Sweetman, Stanley, general manager.

Independence—The Independence, Neodesha & Topeka Traction Company will begin construction about Dec. 1st on its 130-miles electric railway to connect Independence and Topeka, via Neodesha, Altoona, Fredonia and Chanute. Capital stock, $50,000.

Richfield—A new railway will be constructed across the southwestern section of Kansas. It is believed that an extension of the Missouri, Kansas & Texas can be secured. E. C. Wilson, Richfield is interested in the movement.

Ottawa—Dodge City & Cimarron Valley R. R. Co. has awarded contract to Ransom & Cook, Ottawa, for grading 62 additional miles.

Pittsburg—The increasing demand for coal has stimulated its production and heavier shipments are being made. The coal stripping steam shovels are all working full time the only handicap now is the shortage of cars. The Frisco Railroad in particular, which handles an enormous amount of coal in the Pittsburg district, being the greatest offender.

Weir City—The Besse-Cockrill Coal Co., has started stripping with a 150 ton Marion steam shovel on their 80 acre field south of town. Earl Cockrill is a practical coal stripper and will make it go.

Nevada

Ely—The Miner's strike has resulted in about 16 idle shovel crews at Ely, Nev., where 8 shovels were on double shift, and a number of crews at Vingham, where there are about 20 shovels, half of them double shift.

New York

New York—The Manhattan & Jamaica Railway Company will commence construction work on the new electric road within two weeks. The road is to be built from the Queensboro Bridge to Jamaica, by way of Thomson avenue, the company having recently obtained the franchise of the South Shore Traction Company.

Olean—Charles D. Judd of Olean, New York, associated with H. W. Marcus and a number of other local business men, is securing from property owners along the route the right of way for a trolley line to extend from here to Hinsdale, a distance of about seven miles.

New York—Bids for the section of the Lexington avenue subway extending from Trinity place to Dey street, submitted by the following: E. E. Smith Contracting Company, at $1,591,178.50; Cranford Company, $1,427,000; F. L. Cranford, $1,222,000; Patrick McGovern & Co., $1,596,000; J. F. Cogan Company, $1,600,000; Underpinning and Foundation Company, $2,250,000; O'Rourke Engineering Construction Company, $1,600,000; St. George Construction Company, $1,578,000.

Hempstead—Line is contemplated to be built from Hempstead Station south to Baldwin Harbor. It would cover five and one-half miles to there, but it is the intention of the projectors to continue it to Long Beach later. The line is to be owned by a corporation and the estimated cost of building it is $120,000.

Mohawk—The Utica & Mohawk Valley Railroad Co., has applied for franchises for the construction of double track line through the town of German Flats and the village of Mohawk and Ilion, Herkimer County.

New York—It is reported that the big Gotham interests have taken over the Baltimore holdings of the Baltimore & Virginia Railway Co., which is to build the Drum Point line from this city to Drum Point, Md., and that steps would be taken to begin construction work on the road within the next month.

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North Carolina

Durham—The Durham Power Company is being organized with a capitalization of $750,000 and will soon apply for a charter to build and operate an electric railway and other public utilities in Durham. Incorporators: R. N. Duke, New York; George L. Lyon and Jones Fuller, Durham, N. C.

Durham—The Durham North Carolina Power Company, capitalized at $750,000 to build an electric light plant, electric railway, etc., in Durham, is one of the new Southern corporations.

Charlotte—The Norfolk Southern Railroad has awarded Kenefick, Hoffman & Co., Kansas City, Mo., contract to build extension from Mt. Gilead to Charlotte, N. C., and the grading, concrete and trestle work will be sublet at the Selwyn Hote, Charlotte, in the near future. The work will run about 1,500,000 yards of grading, of which about one-half is classified material, about 10,000 yards of masonry and about 3,000,000 feet of timber in the trestle.

Oklahoma

Tulsa—The Sands Springs Interurban Ry. Co., it is stated, plans to build from Tulsa to Nowata, via Owasso and Collinsville, a distance of about 45 miles. Two steel bridges will be required.

Ardmore—The Ardmore-Western Interurban Ry. Co. is reported formed, to extend into a cement, asphalt and oil country; it will be operated either by steam or gasoline motors. Jas. S. Owen, Pres., R. A. White, Secy.

Oklahoma City—Roy Davis is craning and Fred Brooks is fireing the 130 Vulcan at Broken Arrow. On a recent run of ten hours they moved 1413 cubic yards of blue shale rock. The machine is giving splendid satisfaction and is being run by H. F. Colson.

Pennsylvania

South Fork—The South Fork-Portage Street Railway, South Fork, will build five miles of line between South Fork and Wilmore. The capital is $48,000. The Portage Construction Company was chartered with $50,000 capital.

Hendleton—The Reading Transit Company will build a double track high speed road, connecting with the present road at Hendleton, passing through the western limits of the borough of Shillington, and thence down the Wyomising valley, through Cumru township, to connect with the Womelsdorf line at Wyomissing. It will cost over $200,000.

Gettysburg—A large force of men have been put in work double-tracking the line between Mt. Holly Springs and Gettysburg, on the Gettysburg and Harrisburg branch of the Reading Railroad. The work will be finished by the end of this week and with its completion almost the entire Reading system will have two or more tracks.

St. Louis Items

By Tony Michel

J. V. Crawford the well known shovel runner and crew left here for Brommet & Johnsons work on the Wabash near Moberly, Missouri.

Thompson & Scott of St. Louis secured the double tracking in Southeast Missouri on Cotton Belt R. R. They expect to work about 200 Stationmen and later on about the same number of Trackmen. John Scott left here with 50 of the best stationmen last week that ever turned a spade.

The Roberts & Schaefer Co. of Chicago, Ill. have quite a lot of Coal Chute and Coal Washing Stations to erect in this locality. They have finished their Hayti job in record fashion. W. J. Donnelly their Gen'l. Supt. is supervising the various jobs.

J. D. Lynch will finish his contract on the Illinois Central at Centralia soon and will move on another big job South where he will be located for some time. We are unable at this time to state the nature of his new work.

T. N. Detweiler was a caller this week. He is driving piling on the East Side for Gray-Wimmer Co.

The Kinser Const. Co. are piling up estimates on their East St. Louis levee work. They are progressing nicely.

Labor, especially Railroad Labor is scarcer today than any time the writer can remember in 17 years' experience and it is said in the History of America. $3.00 or even $4.00 per day is no inducement to the ordinary Hobo. The fact of the matter is he will at these wages have "His Stake" made in one day and he is gone. Boarding Contractors who have contracts on the various Railroads for Boarding Laborers and keeping the gangs supplied with men have found it necessary to open and maintain free Labor offices here. There is no fee charged and any common laborer has no trouble to ship almost in any direction. Among some of these concerns are: Peterson & Fell Boarding Co.; Modern Boarding Co.; Central Boarding & Supply Co. and the Burlington R. R. Co.

Most of these folks experience the fact that the average Hobo will take his Supper, Bed and Breakfast and then "Take to the Woods".

Frank McKee the well known Boarding Contractor has purchased the old Albers Hotel in St. Louis where he is boarding laborers for the various extra gangs in the Northern part of St. Louis. We wish him success in his new undertaking.

Costello Bros. are making the dirt fly at Edwardsville, Ill. on the Wabash R. R. They have quite a lot of shovel work all along this line.

C. S. Jones with his Thew shovel at Tolono is doing very nicely. Jones finds it very profitable to do 1 to 2 foot filling with this shovel instead of Stationmen. Wm. Beauhold is in charge of the work and shovel.

D. H. Donovan & Co. are finishing their Roundhouse Contract for the Mo. Pac. R. R. at Bush, Ill. and will soon start on their new job at Cairo and one nearLittle Rock, Ark. This work consists of Building Roundhouse Depots, water tanks, and section houses.

Yale & Reagan are working night and day on their big levee contract near Venice, Ill. This is practically heavy shovel work. They report everything moving along nicely.

The Purcell Construction Co. will finish their shovel work at Huxley soon. They can use about 20 good Austrians, however, and will take them to the next job which they have in view. They use Austrians exclusively.

Contractors having work to let of any kind or those wishing to place their outfit when idle write Michel Labor Agency, 9 So. 9th St. St. Louis. We will try to put you in communication with the proper party and publish your wants in the next issue of THE EXCAVATING ENGINEER.

Sims Bros. have two years' work on the L. & N. R. R. near Louisville, Ky. This is heavy work. They have three shovels going continually. The work runs close to the Cumberland Mts. and is of the Solid rock variety.

Gremett & Johnson have some nice work to let in Western Missouri. Write them Moberly, Mo.

South Dakota

Andover—Morris Shepard & Doughtery, of St. Paul, who have been operating two Bucyrus drag line excavators on the C. M. & P. S. R. R. work at Andover ,S. D. report that in July they handled 156,000 cubic yards and in August 151,000 cubic yards. The machines averaged better than one swing a minute for every working hour during July and August. 84 swings per hour with the 100 ft. boom was the fastest time recorded.

Tennessee

M. T. McArthur of Johnson City, Tenn. has just purchased through the Birmingham office of the Bucyrus Co. Two 18-B revolving shovels. One to be installed on their L. & N. work at Elkton, Tenn. where they are also operating a new 45-C shovel. The other shovel is to be installed on their C. & O. work in Virginia. This shovel is to be operated on side hill work and it will be necessary to have it knocked-down for it will have to be lowered by cable from the top of the cut onto the work.

Reports from along up the L. & N. Ry, state, that the Class 80 Atlantic operated by the L. & N. Ry. on their work in Tennessee is certainly moving the dirt in record time.

Walton McDowell Co. have just installed their 70 ton Bucyrus shovel on their L. & N. work at Brentwood, Tenn. This shovel has just been thoroughly over-hauled at the Evansville works of the Bucyrus Co. R. J. Parsons is engineer.

Walton McDowell Co. have just been awarded contract by the L. & N. Ry. for the construction of their Nashville yards. The work consists of excavating 750,000 yards of earth and rock. They will sublet a greater portion of this work. These yards will be the largest in the south and is a combination of four distributing yards.

Straley & Co. have just gotten their new 70-C over onto their work at Cottage Grove, Tenn. and they report that the installation of this machine certainly does show in their monthly estimates. Their work consists mostly of rock. They are subing under T. Towles & Co.

Mr. Hugh Crowe has recently installed two new 70-Cs one for T. Towles & Co. and one for Straley & Co. both at Cottage Grove, Tenn.

Texas

Quanah—The Quanah, Acme & Pacific Ry. Co. is reported to have awarded contract to the Texas Construction Co., of Ft. Worth, for 40 miles of railroad, to be completed by May 15.

Brownwood—Press reports state that surveys are being made for new division terminals to be constructed near Brownwood, at a cost of $500,000, for the Gulf, Colorado & Santa Fe R. R. Co. (F. Merritt, Ch. Engr., Galveston).

Orange—A charter has been granted to the Orange Northwestern Ry. Co. to construct about 126 miles of railroad from Orange to White City; capital, $100,000.

Palestine—T. E. Mitchell, of Neosha, Mo., Pres. of Mitchell-Crittenden Tie Co., is reported interested in the construction of a railroad from Palestine to Dallas by way of Trinidad.

Palestine—The Texas Power Light Company, it is rumored, will build a street car line in Palestine. S. B. Head, Dallas, Texas, is superintendent.

Texarkana—Rollin W. Rodgers and associates, it is stated, have asked the council for a franchise in Texarkana. This is part of a plan to build an electric railway between Texarkana and Clarksville. At Clarksville it will connect with a line now projected from Sherman to Paris.

Utah

New Utah Project

Salt Lake City.—Articles of incorporation have been filed of the Provo & Eastern Utah Railroad. A project involving the expenditure of $50,000,000 and which contemplates development of Eastern Utah and an adjoining section of Colorado. The project includes the building of a railroad from Springville, Utah, on the Oregon Short Line and Denver & Rio Grande to Steamboat Springs, Colo., where the Moffat road, Denver, Northwestern & Pacific Railroad now terminates. Such a line is built would give the Moffat road a much needed outlet and at once put it in the trans-continental class. The project also contemplates the construction on the Green River at Split Mountain northeast of Jensen, of a huge dam for the irrigation of 400,000 acres of productive land, and also a great hydro-electric generating plant to furnish power in eastern Utah and contiguous territory.

Eastern capitalists backing the project are represented by F. W. Short of Chicago. According to his statements, the railroad will cost $16,000,000, the generating plant $15,000,000, and the dam and irrigation system another $15,000,000. Other items will bring the total expenditures to at least $50,000,000.

The Provo & Eastern is also to connect with a new line the Harriman interests are to build from Laramie to either Steamboat Springs, Colo., by way of Hahn's Peak, or direct to Haden, Colo., and it will thus have two eastern outlets. If the Harriman people should build by way of Hahn's Peak they would shorten their trans-continental route 168 miles, and 200 miles if they used the Moffat road.

Rumor has it that the whole project is a Harriman line proposition. If so it would indicate a departure from their past practice which has heretofore kept them out of irrigation projects.

Canada

George Bishop is operating a 55 ton Bucyrus shovel for Mike Donnell & O'Brien at pit No. 213 near Latuque, Que. Wm. Geraghty is craning for him. Mr. Bishop has had 11 years experience in operating shovels and Mr. Geraghty has been craning for 7 years in Minnesota.

Oak Bank—Barney Benson is looking after the clerical work for John Marsh of this city. Evidently Barney is giving satisfaction for he has now been on the job for six years.

Montreal—John Dorgan is erecting an 18-B Bucyrus Revolving shovel for M. Dineen, Montreal. John may stay in Montreal.

Montreal—Phillip Pagano, of the firm of Cavicchi & Pagano, who are constructing the Halifax and Eastern Railroad, which runs from Dartmouth, N. S. to Guysboro, N. S., was in Montreal last week. Their work is progressing very well, but they were held back considerably due to the excessive rains which have prevailed.

Quebec—The work on the Quebec and Saguenay Railway has been shut down due to internal dissension of the Company. It is hoped that matters will be straightened out shortly, and the line completed.

Quebec—Sam Dixon is superintending shovel crews for the Quebec Contracting Co., at St. Anselme. All of this work is now in charge of Mr. Thomas Cozzolino. They are using sixteen shovels. Walter Fraser and Jack McDonald are also on this work.

Quebec—Joe Poupore is building a piece of the St. John Valley Railroad in partnership, under the name of Poupore & Dexter.

Guthrie—McDougal & Co., 313 Lewis building, Portland, Oregon, have been awarded, contract for 42 miles of line for the Great Northern Railway, west from Coalmont, B. C.

UMI

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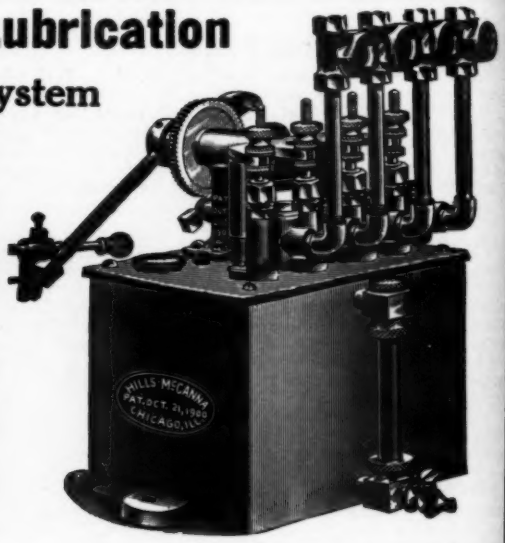

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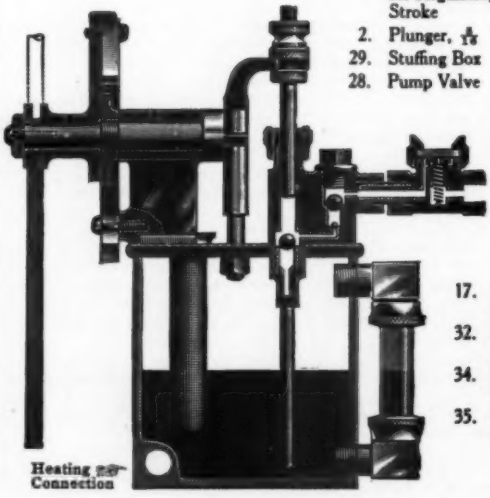
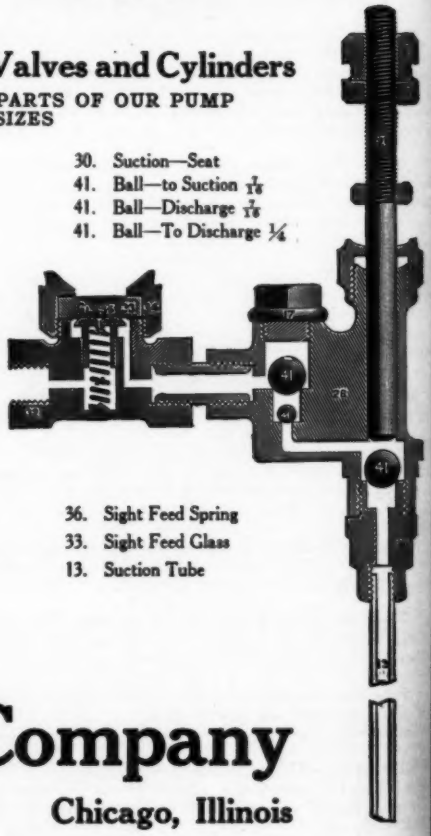
1. Plunger Button for Regulating Stroke
2. Plunger, $\frac{1}{16}$
29. Stuffing Box
28. Pump Valve



17. Pump Valve Cap
32. Sight Feed Body
34. Sight Feed Holder
35. Sight Feed Plunger

30. Suction—Seat
41. Ball—to Suction $\frac{1}{16}$
41. Ball—Discharge $\frac{1}{16}$
41. Ball—To Discharge $\frac{1}{4}$



36. Sight Feed Spring
33. Sight Feed Glass
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A big, strong, healthy youngster that everyone will like. Yet he knows that there are other possibilities.

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In sending you "Chain Belt", we will not try to make you think that you are getting a free subscription to a funny paper. There will be no attempt to rival "Pickings from Puck" or the Comic Supplements.

Nor will "Chain Belt" try to sell you anything. All that we expect of it is that it may be the means of bringing us closer together. And if you should happen to do business with us sometime in the future, why, we will both be glad that we have known each other beforehand.

A lazy man is just about as useless as a dead one--and besides, he takes up more room.
— *Elbert Hubbard.*

And so we are going to try to interest you. Not by talking about ourselves all of the time; but by telling you things that have to do with your business and our own where it touches yours.

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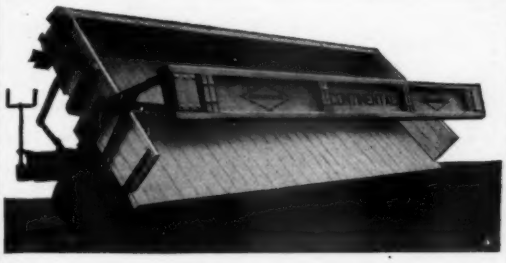

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ALPHABETICAL LIST OF ADVERTISERS

	Page
Adams, H. S.	114
American Locomotive Co.	Inside Back Cover
Arnold, Co.	114
Bach, William	114
Buckbee Company, J. C.	114
Bucyrus Co.	Inside Front Cover–113–117
Bureau of Engraving, Inc.	119
Chain Belt Co.	112
Chance, H. M.	114
Collbran, Arthur H.	114
Continental Car & Equipment Co.	113
Cream City Equipment Co.	118
Farish, John B.	114
Garrison, F. Lynwood	114
Haggard & Marcusson, Inc.	115
Hill, C. W.	113
Hills-McCanna Co.	110
Lima Locomotive Corporation	116
Macomber & Whyte Rope Co.	115
Males Co., The	118
Marsh Co.	118
McDermott, Mitchell & McDermott	114
Meisenheimer Printing Company	119
Michel, A. J.	120
Penberthy Injector Co.	120
Powell Co., The Wm.	118
Randolph, Isham	114
Roebling's Sons Co., John A.	120
Standard Concrete Construction Co.	118
Stephens-Adamson Mfg. Co.	116
St. Louis Cordage Mills	111
Taylor Chain Co., S. G.	115
Weis, S. J.	114
Western Wheeled Scraper Co.	Back Cover
York Grant & Co.	114

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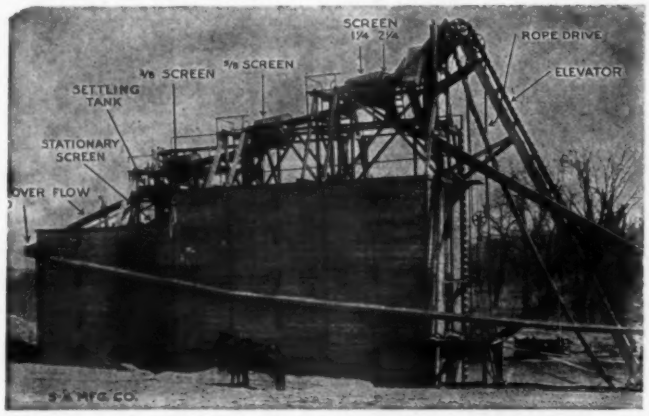

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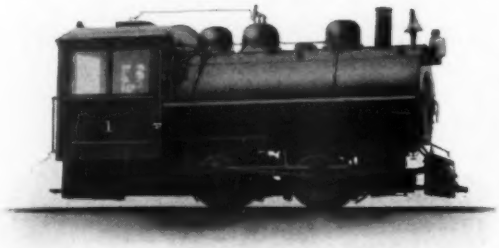

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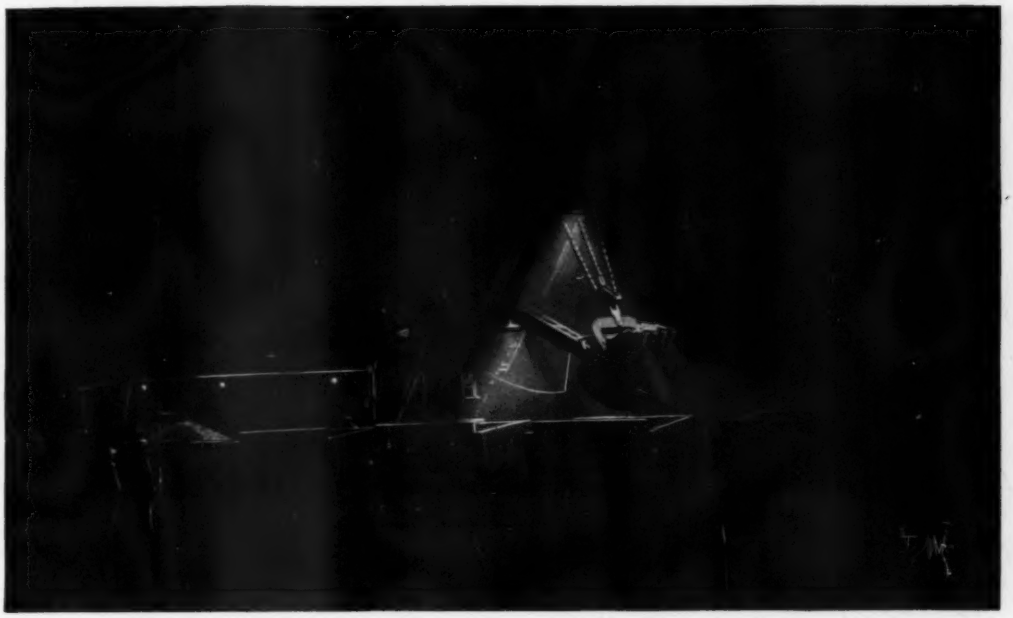

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